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PHILOCLES *in the Island of* SAMOS

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A

VINDICATION

OF

DIVINE PROVIDENCE;

DERIVED FROM A

PHILOSOPHIC AND MORAL SURVEY

OF

NATURE AND OF MAN.

BY

JAMES HENRY BERNARDIN

DE SAINT PIERRE.

AUTHOR OF THE STUDIES OF NATURE.

..... MISERIS SUCCURRERE DISCO.

TRANSLATED BY

HENRY HUNTER, D. D.

MINISTER OF THE SCOTS CHURCH, LONDON WALL.

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1797.

TO

THE CLERGY

OF

NEWENGLAND.

IN commending to your patronage the firſt AMERICAN EDITION of a *VINDICATION* OF A *DIVINE PROVIDENCE*, I ſolicit your attention to doctrines of which you are the appointed teachers and guardians; and pay my tribute of reſpect to a body of men, as diſtinguiſhed by merit as venerable by office.

WHEN an European expreſſes his admiration of the characters of the NEW-ENGLAND CLERGY, his ſincerity will be un-

queſtioned, if his opportunity of comparing them with thoſe of the CLERGY of other countries be conſidered. The prejudices of a different education, and the influence of foreign attachments, and of a depraved taſte, muſt be remarkably ſtrong to render him unable to perceive, and indiſpoſed to acknowledge, the eminent worth of the former. If good ſenſe and ſolid learning, mild philoſophy, ſimplicity of manners, and ſanctity of life, adorn and exalt the human character, the CLERGY of NEW-ENGLAND are one of the moſt reſpectable bodies of men in the world.

MY believing that this work is calculated to advance RELIGION and MORALS, and that men of talents and principle, in this country, have both the power and inclination to hinder the circulation, or to counteract the effect of bad books, by encouraging thoſe which are good, leads me to deſire and expect

your patronage of my preſent undertaking. It muſt be pleaſing to you to find, that there are not wanting, antidotes to the poiſon of infidelity, which from various cauſes, ſo much infects the French Nation, in the ingenious and elegant writings of great and good men. In paſt years, they have been privileged with BOSSUET, a MASSILLON, a BOURDALOUE and a FENELON, names immortal as the works they left; and in a late period with a *SAINT PIERRE*, who appears, in his life and writings, to be, not leſs the friend of Religion than of Philoſophy, the reverent and admiring Student of the Volume of REVELATION and the Volume of NATURE.

JOSEPH NANCREDE.

Boſton, March 1, 1797.

PREFACE.

THE doctrine of a Divine Providence has an intimate connexion with the Virtue and Happineſs of Man. We muſt be deſtitute of any ideas of duty, and ground of ſatisfaction, if we do not believe the circumſtances and events of the World to be under an intelligent and good direction. To doubt whether the Syſtem, of which we make a part, be not ſubject to giddy chance, or blind fate, is to doubt whether exiſtence be not a curſe, and man have not greater reaſon to mourn than rejoice—to fear than hope.

THE ſentiment of a governing Deity, is found in the moſt ignorant and uncultivated minds. But till this ſentiment of untaught nature is corrected by Science, it is likely to be in many reſpects falſe, partial and unworthy. The extenſive knowledge of the Works of God, tends to rectify thoſe ideas of his character, which are acquired by a ſuperficial view of ſome parts of the Syſtem, and furniſhes ample materials for the vindication of his moral perfections, and the doctrine of a univerſal Provi-

dence. Admitting, as firſt principles, that ſigns of intelligence in the work, prove intelligence in the workman; and that the tendency of the work to the production of good, proves this intelligence directed by goodneſs; the examination of the frame of the world exhibits abundant evidence of the wiſdom and benevolence of its Framer. The inſtances in every department of Nature, of a great number of things of ſimilar ſtructure, and of a great variety of parts mutually adapted, are infallible proofs of wiſe deſign in its author; and the happineſs, which is the leading object and the prevailing reſult of every arrangement, forbid a doubt of his benevolence.

To invite us to attend to theſe characters of wiſdom and goodneſs, in the condition of the world and its inhabitants, and to echo the voice of earth, ſea, air and all creatures, animate and inanimate, which proclaim a forming, preſerving and governing God, the writer of the following work employs a rich ſtore of natural knowledge, and the powers of a forcible and pathetic eloquence. In our apprehenſion, it is no exaggeration of the merits of the work, to ſay, that it gives a juſt and beautiful, though rapid, ſketch of the beneficence of Nature; that it fairly ſtates and ably anſwers the objections to a Providence, ariſing from the diſorders of Nature, and calamities of the human race; and that it produces many arguments in ſupport of the con-

ſoling idea, that nothing is made in vain, and that Evil is no where ordained or permitted in the ſyſtem, but for the ſake of greater good. Not that it is pretended by the author, to be within the reach of our limited minds, to diſcover the iſſue of every plan, or the uſe of every arrangement; but he means to ſhow that we diſcover wiſe and uſeful deſign in ſo many parts, even thoſe which, at firſt view, ſeem to diſturb the general order, that we ought to conclude we ſhould diſcover it in the whole, were our views as extenſive and complete as Nature.

THE apparent diſorders in the form and changes of our Globe, are here ſhown to be reconcileable to the doctrine of a Providence, by pointing to proportions, adaptations and harmonies, that prove what ſeems chance in Nature, to be deſign; what ſeems deficiency, compenſations; and what ſeems injurious, beneficial; ſo that equal ſervice is rendered to the whole by the furious cataract and the gentle river—the cold barren mountain, and the warm fertile valley—the ſandy deſert and the fruitful plain. Whether his theory of the tides be ſupported or not by juſt reaſonings, ſolid arguments are produced by him to evince, that much in the preſent form and condition of our Globe, often aſcribed to convulſion, and therefore pronounced diſorder, is the original and important arrangement of its Maker. We are referred to a

proof of the ever present and powerful agency of the Divine Being in the preservation of vegetable life and perpetual verdure, equally under the scorching line and the freezing pole, and the provision of a suitable plant for every soil—in the exact adaptation of the size, instincts, powers and habits of animals to their situation and use, and the employment even of their ferocious dispositions, and voracious appetites, in the service of the other creatures—in the correspondence of the complexion, form, dispositions and faculties of man to his condition—in the adjustment of the calamities of his state, which are made to appear either as disguised blessings, means of his improvement, or the effects of his choice, or the punishments of his vice and folly, or the instruments of removing themselves. The efficacy of the Christian Religion, of mild and equal laws, of humane and just maxims in the conduct of education, is represented with propriety and force. In short, we are assisted by this instructive and delightful work, to behold the traces of a wise and benevolent hand in every region of nature, in every object and event; and to find sources of intellectual and moral enjoyment, on every side.

The believers in a Divine Providence, must be gratified to find that in a nation, where an atheistic Philosophy so much prevails, this fundamental article of religion is so ably defended; and

they muſt approve the publication in this country of a work, adapted to counteract the influence of thoſe licentious opinions, which are too widely diffuſed, and too readily embraced. It is the obſervation of the Tranſlator, whoſe fidelity and taſte have done great juſtice to the original, that in few works has he found the uſeful and agreeable more happily blended.

We here preſent, in a ſeparate volume, all that portion of THE STUDIES OF NATURE, which relates immediately to the ſubject of religion, for the accommodation of thoſe readers, who may want ability to purchaſe, or time to peruſe, the whole work. Whatever any may think of ſome of the Author's theoretic ideas, we venture to expreſs our opinion, that if much valuable, and ſome new information, ſublime ſentiments of religion, a pure morality, and an ardent ſpirit of philanthropy, can render a book generally intereſting, this Selection will be well received by the American public.

A

VINDICATION

OF

DIVINE PROVIDENCE.

MOST men, in policed Nations, look on Nature with indifference. They are in the midſt of her Works, and they admire only human grandeur. What charm, after all, can render the Hiſtory of Men ſo intereſting? It has to boaſt of vain objects of glory alone, of uncertain opinions, of bloody victories, or, at moſt, of uſeleſs labours. If Nature, ſometimes, finds a place in it, we are called upon to obſerve only the ravages which ſhe has committed, and to hear her charged with a thouſand calamities, which may be all traced up to our own imprudence.

With what unremitting attention, on the contrary, is this common Mother providing for us the means of happineſs! She has diffuſed her benefits over the Globe, from Pole to Pole, entirely in the view of engaging us to unite in a mutual communication of them. She is inceſſantly recalling us from the prejudices, which unhappily ſeparate Mankind, to the univerſal laws of Juſtice and Humanity, by frequently putting our ills in the hands of the ſo highly vaunted conquerors, and our pleaſures in thoſe of the oppreſſed, whom we hardly deign to favour with ſo much as our pity.

When the Princes of Europe iſſued forth, with the Goſpels in their hand, to ravage Aſia, they brought back with them the peſtilence, the leproſy and the ſmall pox; but Nature pointed out to a Derviſe the coffee plant, in

the mountains of Yemen, and produced, at one and the ſame time, our plagues from our Croiſades, and our delicious beverage from the cup of a Mahometan monk. The ſucceſſors of theſe Princes ſubjugated the American Continent, and have tranſmitted to us, by means of this diſcovery and conqueſt, an inexhauſtible ſucceſſion of wars and venereal diſeaſes. While they were exterminating the inoffenſive inhabitants of it by their murderous artillery, a Caraïb, in token of peace, ſet the ſailors to ſmoking his calumet ; the perfume of tobacco diſſipated their chagrin, and the uſe of it is diſſeminated over the whole Earth ; and while the miſeries of two Worlds are iſſuing from the cannon's mouth, which Kings call their ULTIMA RATIO, the conſolations of the civilized States of Europe, ſtream from the pipe of a Savage.

To whom are we indebted for the uſe of ſugar, of chocolate, of ſo many agreeable means of ſubſiſtence, and ſo many ſalutary medicines ? To naked Indians, to poor Peaſants, to wretched Negroes. The ſpade of ſlaves has done more good, than the ſword of conquerors has done miſchief. But in which of our great ſquares are we to look for the ſtatues of our obſcure benefactors ? Our Hiſtories have not vouchſafed ſo much as to preſerve their names. We need not, however, to go ſo far, in queſt of proofs of the obligations under which we lie to Nature. Is it not to the ſtudy of her laws, that Paris is indebted for ſuch multiplied illumination, collected from every quarter of the Globe, combined a thouſand different ways, and reflected over Europe in Sciences the moſt ingenious, and enjoyments the moſt refined, of every ſpecies ?

Where is now the time, when our forefathers leaped for joy at finding a wild plumb tree, on the banks of the Loire ; or at catching a poor roe in the chace in the vaſt plains of Normandy ? Our fields, now ſo richly cloathed with harveſts, and orchards and flocks, did not then produce the common neceſſaries of life. They wandered up and down, living on the precarious ſupplies of hunt-

ing, and not daring to truſt to Nature. Her ſimpleſt phenomena filled them with terror. They trembled at the ſight of an eclipſe, of an *ignis fatuus*, of a branch of miſletoe on the oak. Not that they believed the affairs of the World to be ſurrendered to Chance. They recognized every where Gods poſſeſſed of intelligence ; but not daring to believe them good, while cruel prieſts were their only inſtructors in religion, theſe unfortunate people imagined, that the Gods took pleaſure only in tears, and immolated to them human victims, on the very ſpot, perhaps, on which now ſtands a receptacle for the wretched.*

Let me ſuppoſe, that a Philoſopher, ſuch as *Newton*, were, then, to have treated them with the ſpectacle of ſome of our natural Sciences, and to have ſhewn them, with the microſcope, foreſts in moſs, mountains in grains of ſand, thouſands of animals in drops of water, and all the wonders of Nature, which, in a downward progreſs to

* Some Writers, of our own, have compoſed the eulogium of the Druids. I ſhall oppoſe to them, among other authorities, that of the Romans, who, it is well known, were abundantly tolerant in matters of religion. Ceſar in his Commentaries, informs us, that the Druids, in honour of their Gods, burnt men in baſkets of oſier ; and that when criminals were wanting for this horrible purpoſe, they ſacrificed even the innocent. Suetonius, in his life of Claudius, gives this account of the matter : " The religion of the " Druids, too cruel, it muſt be confeſſed, and which, from the time of Au- " guſtus had been ſimply forbidden, was by him entirely aboliſhed." Herodotus had, long before, loaded them with the ſame reproach.

All that can be oppoſed to the teſtimony of three Roman Emperors, and to that of the Father of Hiſtory, is the ſilly evidence of the romance of Aſtræa. Have we not faults enough juſtly chargeable on ourſelves, without undertaking the difficult taſk of juſtifying thoſe of our anceſtors ? They were not, indeed, it muſt be allowed, more culpable than other Nations, who all preſented human ſacrifices to the DIVINITY. Plutarch reproaches the Romans themſelves, with having immolated, in the earlier times of the Republic, two Gauls and two Greeks, whom they buried alive.

Is it poſſible, then, that the firſt ſentiment of Man, in a ſtate of nature, could have been that of terror; and that he muſt have believed in the Devil before he believed in God ? O ! no. It is Man who, univerſally, has miſled Man. One of the great benefits, for which we are indebted to the Chriſtian Religion, has been the deſtruction, in a conſiderable part of the World, of theſe inhuman doctrines and ſacrifices.

nothing, multiplies the refources of her intelligence, while the human eye becomes incapable of perceiving the boundary : Let me go on to fuppofe, that afterwards, difcovering to them, in the Heavens, a progreffion of greatnefs equally infinite, he had fhewn them, in the planets, hardly perceptible to the naked eye, Worlds much greater than ours, Saturn, three hundred millions of leagues diftant ; in the fixed ftars, infinitely more remote, Suns which, probably, illuminate other Worlds ; in the whitenefs of the Milky Way, ftars, that is Suns, innumerable, fcattered about in the Heavens, as grains of duft on the Earth, without Man's knowing whether all this may not be more than the threfhold of Creation merely ; with what tranfports would they have viewed a fpectacle which we, at this day, behold without emotion ?

But I would rather fuppofe, that, unprovided with the magic of Science, a man like *Fenelon* had prefented himfelf to them, in all the majefty of Virtue, and thus addreffed the Druids : " You frighten yourfelves, my " friends, with the groundlefs terrors which you inftil in- " to the people. God is righteous. He conveys to the " wicked terrible apprehenfions, which recoil on thofe " who communicate them. But He fpeaks to all men in " the bleffings which He beftows. Your religion would " govern men by fear ; mine draws them with cords of " love, and imitates his Sun in the firmament, whom He " caufes to fhine on the evil and on the good." Let me finally, fuppofe, that, after this, he had diftributed among them the fimple prefents of Nature, till then unknown, fheaves of corn, flips of the vine, fheep clothed with the woolly fleece : Oh ! what would have been the gratitude of our grandfathers ! They would, perhaps, have fled with terror from the Inventor of the telefcope, miftaking him for a Spirit ; but, undoubtedly, they would have fallen down, and worfhipped the Author of Telemachus.

Thefe, after all, are only the fmalleft part of the bleffings for which their rich defcendants ftand indebted to

Nature. I say nothing of that infinite number of arts, which are employed at home, to diffuse knowledge and delight; nor of that terrible invention of artillery, which secures to them the enjoyment of these, while the noise of it disturbs their repose at Paris, only to announce victories; nor of that new, and still more wonderful, art of electricity, which screens* their hotels from the thunder; nor of the privilege, which they have, in this venal age, of presiding, in all States, over the happiness of men, when they believe they have nothing more to fear from the powers of Earth and Heaven.

But the whole world is engaged only in the pursuit of pleasure. England, Spain, Italy, the Archipelago, Hungary, all Southern Europe, is adding, every year, wools

* On the subject of the effects of Electricity, a thought abundantly impious has been expressed, in a Latin verse, the import of which is, that Man has *disarmed the* DEITY. Thunder is by no means a particular instrument of divine Justice. It is necessary to the purification of the air, in the heats of Summer. God has permitted to Man the occasional disposal of it, as He has given him the power of using Fire, of crossing the Ocean, and of converting every thing in Nature to his advantage. It is the ancient Mythology, which, representing Jupiter always wielding the thunder, has inspired us with so much terror. We find, in the Holy Scriptures, ideas of the DIVINITY much more consolatory, and a much sounder Philosophy. I may, perhaps, be mistaken, but I do not believe there is a single passage in the Bible, in which thunder is mentioned as an instrument of divine Justice. Sodom was destroyed by showers of fire and brimstone. The ten plagues, with which Egypt was smitten, were the corruption of the waters, swarms of reptiles, lice, flies, the pestilence, ulcers, hail, caterpillars, thick darkness, and the death of the first born. Corah, Dathan and Abiram, were consumed by fire issuing out of the Earth. When the Israelites murmured in the wilderness of Paran; *the fire of the* LORD *burnt among them, and consumed them that were in the uttermost parts of the camp*, Numb. xi. 1. In the threatenings denounced against the people in Leviticus, no mention is made of thunder. On the contrary, it was amidst the noise of thunder that GOD promulgated his law to his chosen people, from Mount Sinai. Finally, in that sublime piece of poetry, wherein David summons all the works of JEHOVAH, to praise him, he calls, among the rest, upon the thunder; and it is not foreign to our purpose to remark, that he includes, in his summons, all the meteors which enter into the necessary harmony of the Universe. He qualifies them with the majestic title of the *Angels*, and *Hosts* of the MOST HIGH. *See Psalm* cxlviii.

to their wools, wines to their wines, filks to their filks. Afia fends them diamonds, fpices, muflins, chintzes and porcelain; America, the gold and filver of her mountains, the emeralds of her rivers, the die ftuffs of her foreſts, the cochineal, the fugar cane, and the cocoa nut of her fervid plains, which their hands did not cultivate; Africa, her ivory, her gold, her very children, which ſerve them as beaſts of burden all over the globe.

There is not a ſpot of the Earth, or of the Sea, but what furniſhes them with ſome article of enjoyment. The gulfs of the Ocean provide them pearls, its ſhallows, ambergris, and its icy promontories, furs. At home, they have reduced the rivers and mountains to a ſtate of vaſſalage, in order to reſerve to themſelves feudal rights to fiſheries and chaces. But there was no occaſion to put themſelves to ſo much expenſe. The ſands of Africa, where they have no gamekeeper, ſend them, in clouds, quails, and other birds of paſſage, which croſs the Sea in Spring, to load their table in Autumn. The Northern Pole, where they have no cruiſer, pours on their ſhores, every Summer, legions of mackerel, of freſh cod and of turbots, fattened in the long nights of Winter.

Not only the fowls and the fiſhes change, for them, their climate, but the very trees themſelves. Their orchards, formerly, were tranſplanted from Aſia, and now, their parks from America. Inſtead of the cheſnut and walnut, which ſurrounded the farms of their vaſſals, in the ruſtic domains of their anceſtors, the ebony, the ſorb apple of Canada, the great cheſnut of India, the magnolium, the tulip bearing laurel, encircle their country palaces with the umbrage of the new World, and, ere long, of its ſolitudes. They have ſummoned the jaſmin from Arabia, the orange from China, the pineapple from Braſil, and a multitude of ſweet ſcented plants, from every region of the torrid Zone. They have no longer occaſion for ſuns: They can diſpoſe of latitudes. They can convey, in their hot houſes, the heats of Syria to exotic plants, at the very

ſeaſon when their hinds are periſhing with the cold of the Alps, in their hovels.

No one of the productions of Nature can eſcape their avidity. What they cannot have living, they contrive to have dead. The inſects, birds, ſhell fiſh, minerals, nay, the very ſoil of the moſt diſtant lands, enrich their cabinets. Painting and engraving preſent them with the proſpect, and procure them the enjoyment, of the Glaciers of Switzerland, during the burning heat of the Dogdays; and of the Spring of the Canaries, in the midſt of Winter. The intrepid Navigator brings them, from regions into which the Arts dare not to penetrate, journals of voyages, ſtill more intereſting than the productions of the pencil; and redouble the ſilence, the tranquillity, the ſecurity of their nights, ſometimes by a recital of the horrible tempeſts of Cape Horn, ſometimes by that of the dances of the happy Iſlanders of the South Seas.

Not only every thing that actually exiſts, but Ages paſt, all contribute to their felicity. Not for the Temple of Venus only did Corinth invent thoſe beautiful columns, riſing like palm trees; no, but to ſupport the alcoves of their beds. There voluptuous Art veils the light of the day through taffetas of every colour; and imitating, by ſoftened reflexes, either of moonlight, or of ſunriſing, repreſents the objects of their loves like ſo many Dianas or Auroras. The art of Phidias has for them produced a contraſt to female beauty, in the venerable buſts of a Socrates and a Plato.

Obſcure ſcholars, by efforts of labour, which nothing can remunerate, have for them procured the knowledge of the ſublime geniuſes, who were ornaments of the World, in times nearer to the Creation; Orpheus, Zoroaſter, Eſop, Lokman, David, Solomon, Confucius and a multitude of others, unknown even to Antiquity. It was not for the Greeks, it is for them, that Homer ſtill ſings of

Heroes and of Gods, and that Virgil warbles the notes of the Latin flute, which raviſhed the ears of the Court of Auguſtus, and there rekindled the love of Country and of Nature. For them it is that Horace, Pope, Addiſon, La Fontaine, Geſner, have ſmoothed the rough paths of Wiſdom, and have rendered them more acceſſible, and more lovely, than the treacherous ſteeps of Folly.

A multitude of Poets and Hiſtorians of all Nations, a Sophocles, an Euripides, a Corneille, a Racine, a Shakeſpear, a Taſſo, a Xenophon, a Tacitus, a Plutarch, a Suetonius, introduce them into the very cloſets of thoſe terrible Potentates, who bruiſed, with a rod of iron, the head of the Nations, whoſe happineſs was intruſted to their care, and call them to rejoice in their happy deſtiny, and to hope for a better ſtill, under the reign of another Antonius. Thoſe vaſt geniuſes, of all Ages, and of all Countries, celebrating, without concert, the undecaying luſtre of Virtue, and the Providence of Heaven, in the puniſhment of Vice, add the authority of their ſublime reaſon to the univerſal inſtinct of Mankind, and multiply, a thouſand and a thouſand times, in their favour, the hopes of another life, of much longer duration, and of more exalted felicity.

Does it not ſeem reaſonable, that a chorus of praiſe ſhould aſcend, day and night, from the dome of every hotel, to the AUTHOR of Nature? Never did ancient King of Aſia accumulate ſo many means of enjoyment in Suza, or Ecbatana, as our common tradeſmen do in Paris. Theſe Monarchs, nevertheleſs, every day paid adoration to the Gods; they would engage in no enterprize till the Gods were conſulted; they would not ſo much as ſit down to table, until the libation of religious acknowledgment was poured out. Would to GOD that our Epicureans were chargeable with indifference only to the hand which is continually loading them with benefits! But it is from

the very lap of plenteouſneſs and pleaſure, that the voice of murmuring againſt Providence now ariſes. From their Libraries, ſtored with ſo many ſources of knowledge, iſſue forth the black clouds which have obſcured the hopes and the virtues of Europe.

STUDY SECOND.

OBJECTIONS AGAINST PROVIDENCE.

" THERE is no God," ſay theſe ſelf conſtituted ſages. " From the work form your judgment of the workman.* " Obſerve firſt of all, this Globe of ours, ſo deſtitute of " proportion and ſymmetry. Here it is deluged by vaſt " ſeas ; there it is parched with thirſt, and preſents only " wilderneſſes of barren ſand. A centrifugal force, oc- " caſioned by its diurnal rotation, has heaved out its E- " quator into enormous mountains, while it flattened the " Poles : For the Globe was originally in a ſtate of " ſoftneſs ; whether it was a mud recovered from the " empire of the Waters, or, what is more probable, a " ſcum detached from the Sun. The volcanoes, which " are ſcattered over the whole Earth, demonſtrate, that " the fire which formed it is ſtill under our feet. Over " this ſcoria, ſo wretchedly levelled, the rivers run as " chance directs. Some of them inundate the plains ; " others are ſwallowed up, or precipitate themſelves in " cataracts, and no one of them preſents any thing like a " regular current. The iſlands are merely fragments of " the Continent, violently ſeparated from it by the O- " cean ; and what is the Continent itſelf, but a maſs of " hardened clay ? Here the unbridled Deep devours its

* See replies to this objection in Study III.

" shores ; there, it deserts them, and exhibits new moun-
" tains, which had been formed in its womb. Amidst
" this conflict of contending elements, this baked lump
" grows harder and harder, colder and colder, every day.
" The ices of the Poles, and of the lofty mountains, ad-
" vance into the plains, and insensibly extend the uni-
" formity of an eternal Winter over this mass of confu-
" sion, ravaged by the Winds, the Fire and the Water.

" In the vegetable World, the disorder increases upon
" us.* Plants are a fortuitous production, of humid and
" dry, of hot and cold, the mould of the Earth merely.
" The heat of the Sun makes them spring up, the cold
" of the Poles kills them. Their sap obeys the same me-
" chanical laws with the liquid in the thermometer, and
" in capillary tubes. Dilated by heat, it ascends through
" the wood, and redescends through the rind, following
" in its direction the vertical column of the air which
" impresses that direction. Hence it is that all vegeta-
" bles rise perpendicularly, and that the inclined plane
" of a mountain can contain no more than the horizon-
" tal plane of its base, as may be demonstrated by Geom-
" etry. Besides, the Earth is an ill afforted garden,
" which presents, almost every where, useless weeds, or
" mortal poisons.

" As to the animals, which we know better, because
" they are brought nearer to us, by similar affections,
" and similar wants, they present still greater absurdities.†
" They proceeded, at first, from the expansive force of
" the Earth, in the first Ages of the World, and were
" formed out of the fermented mire of the Ocean and of
" the Nile, as certain Historians assure us ; among oth-
" ers Herodotus, who had his information from the Priests
" of Egypt. Most of them are out of all proportion.

* The reply is in Study IV.

† The reply to this is in Study V.

" Some have enormous heads and bills, ſuch as the tou-
" can ; others long necks and long legs, like the crane ;
" Theſe have no feet at all, thoſe have them by hundreds ;
" others have theirs diſfigured by ſuperfluous excreſ-
" cences, ſuch as the meaningleſs ſpurs of the hog, which,
" appended at the diſtance of ſome inches from his feet,
" can be of no ſervice to him in walking.

" There are animals ſcarcely capable of motion, and
" which come into the World in a paralytic ſtate, ſuch
" as the ſloth or ſluggard, who cannot make out fifty paces
" a day, and ſcreams out lamentably as he goes.

" Our cabinets of Natural Hiſtory are filled with mon-
" ſters; bodies with two heads; heads with three eyes,
" ſheep with ſix feet, &c. which demonſtrate that Nature
" acts at random, and propoſes to herſelf no determinate
" end, unleſs it be that of combining all poſſible forms:
" And, after all, this plan would denote an intention
" which its monotony diſavows. Our Painters will al-
" ways imagine many more beings than can poſſibly be
" created. Add to all this, the rage and fury which deſ-
" olate every thing that breathes: The hawk devours
" the harmleſs dove in the face of Heaven.

" But the diſcord which rages among animals is noth-
" ing, compared to that which conſumes the human race.*
" Firſt, ſeveral different ſpecies of men, ſcattered over
" the earth, demonſtrate that they do not all proceed from
" the ſame original. There are ſome black, others white,
" red, copper coloured, lead coloured. There are ſome
" who have wool inſtead of hair; others who have no
" beard. There are dwarfs and giants. Such are, in
" part, the varieties of the human ſpecies, every where
" equally odious to Nature. No where does ſhe nouriſh
" him with perfect good will. He is the only ſenſible
" being laid under the neceſſity of cultivating the earth,

* The reply is in Study VI.

" in order to ſubſiſt: And, as if this unnatural mother " were determined to perſecute, with unrelenting ſeveri- " ty, the child whom ſhe has brought forth, inſects devour " the ſeed as he ſows it, hurricanes ſweep away his har- " veſts, ferocious animals prey on his cattle, volcanoes " and earthquakes deſtroy his cities; and the peſtilence " which, from time to time, makes the circuit of the " Globe, threatens, at length, his utter extermination.

" He is indebted to his own hands for his intelligence, " his morality is the creature of climate, his governments " are founded in force, and his religion in fear. Cold " gives him energy; heat relaxes him. Warlike and " free in the North, he is a coward and a ſlave between " the Tropics. His only natural laws are his paſſions. " And, what other laws ſhould he look for? If they " ſometimes lead him aſtray, is not Nature, who beſtow- " ed them upon him, an accomplice at leaſt, in his crim- " inality? But he is made ſenſible of their impulſe, only " as a warning never to gratify them.

" The difficulty of finding ſubſiſtence, wars, impoſts, " prejudices, calumnies, implacable enemies, perfidious " friends, treacherous females, four hundred ſorts of bod- " ily diſtemper, thoſe of the mind, both more cruel and " more numerous, render him the moſt wretched of crea- " tures that ever ſaw the light. It were much better that " he had never been born. He is every where the victim " of ſome tyrant. Other animals are furniſhed with the " means of fighting, or, at leaſt, of flying; but man has " been toſſed on the Earth by chance, without an aſ- " ylum, without claws, without fangs, without velocity, " without inſtinct, and almoſt without a ſkin; and as if it " were not enough for him to be perſecuted by all nature, " he is in a ſtate of perpetual war with his own ſpecies. " In vain would he try to defend himſelf from it. Vir- " tue ſteps in, and binds his hands, that vice, in ſafety, may

" cut his throat. He has no choice, but to ſuffer, and to
" be ſilent.

" What, after all, is this virtue, about which ſuch pa-
" rade is made? A combination of his imbecility; a re-
" ſult of his temperament. With what illuſions is ſhe
" fed? Abſurd opinions, founded merely on the ſoph-
" iſms of deſigning men, who have acquired a ſupreme
" power by recommending humility, and immenſe riches
" by preaching up poverty. Every thing expires with us.
" From experience of the paſt, let us form a judgment of
" the future; we were nothing before our birth; we ſhall
" be nothing after death. The hope of our virtues is a
" mere human invention, and the inſtinct of our paſſions
" is of divine inſtitution.

" But there is no GOD.* If there were, He would be
" unjuſt. What being, of unlimited power and goodneſs,
" would have expoſed, to ſo many ills, the exiſtence of
" his creatures; and laid it down as a law, that the life of
" ſome could be ſupported only by the death of others?
" So much diſorder is a proof that there is no GOD. It
" is fear that formed him. How muſt the World have
" been aſtoniſhed at ſuch a metaphyſical idea, when Man
" firſt, under the influence of terror, thought proper to
" cry out, that there was a GOD! What could have made
" him GOD? Why ſhould he be GOD? What plea-
" ſure could he take in that perpetual circle of woes, of
" regenerations and deaths.†"

* The reply is in Study VII.

† The refutation of theſe objections will be found by the numeral characters, which correſpond to each particular Study. All of them are there reſolved directly, or indirectly; For it was not poſſible to follow, in a Work of this kind, the ſcholaſtic order of a ſyſtem of philoſophy.

STUDY THIRD.

REPLIES TO THE OBJECTIONS AGAINST PROVIDENCE.

SUCH are the principal objections which have been raiſed, in almoſt every Age, againſt a Providence, and which no one will accuſe me of having ſtated too feebly. Before I attempt a refutation of them, I muſt be permitted to make a few reflections on the perſons who maintain them.

Did theſe murmurings proceed from ſome wretched mariners, expoſed at ſea to all the revolutions of the Atmoſphere, or from ſome oppreſſed peaſant, labouring under the contempt of that ſociety whom his labour is feeding, my aſtoniſhment would be leſs. But our Atheiſts are, for the moſt part, well ſheltered from the injuries of the Elements, and eſpecially from thoſe of Fortune. The greateſt part of them have never ſo much as travelled. As to the ills of Civil Society, they moſt unreaſonably complain; for they enjoy its ſweeteſt and moſt reſpectful homage, after having burſt aſunder all its bands, by the propagation of their opinions. What have they not written on Friendſhip, on Love, on Patriotiſm, and on all the Human Affections, which they have reduced to the level of thoſe of the beaſts, while ſome of them could render human affection almoſt divine by the ſublimity of their talents!

Are not they, in part, the very perſons to whom many of our calamities may be juſtly imputed, for their flattering, in a thouſand different ways, the paſſions of our modern tyrants, whilſt a croſs, riſing in the midſt of a deſert, comforts the miſerable? It is a matter of no ſmall difficulty to retain theſe laſt in a rational devotion; and it is a moral phenomenon which appeared to me, for a long time, inexplicable, to behold, in every Age, atheiſm ſpringing up among men who had moſt reaſon to cry up the goodneſs of Nature, and ſuperſtition among thoſe who have the juſteſt ground of complaint againſt her. It is amidſt the luxury of Greece and Rome, in the boſom of the wealth of Indoſtan, of the pomp of Perſia, of the voluptuouſneſs of China, of the overflowing abundance of European Capitals, that men firſt ſtarted up, who dared to deny the exiſtence of a DEITY. On the contrary, the houſeleſs Tartars; the Savages of America, continually preſſed with famine; the Negroes, without foreſight, and without a police; the inhabitants of the rude climates of the North, ſuch as the Laplanders, the Greenlanders, the Eſquimaux, ſee Gods every where, even in a flint.

I long thought that atheiſm, in the rich and luxurious, was a dictate of conſcience. "I am rich, and I am a "knave," muſt be their reaſoning, "therefore there is no "GOD." "Beſides, if there is a GOD, I have an ac- "count to render." But theſe reaſonings, though natural, are not general. There are atheiſts, who poſſeſs legitimate fortunes, and uſe them morally well, at leaſt externally. Beſides, for the contrary reaſon, the poor man ought to argue thus; "I am induſtrious, honeſt and miſerable; "therefore there muſt be no Providence." But in Nature herſelf we muſt look for the ſource of this unnatural ratiocination.

In all countries, the poor riſe early, labour the ground, live in the open air, and in the fields. They are penetrated

with that active power of Nature which fills the Univerſe. But their reaſon, ſinking under the preſſure of calamity, and diſtracted by their daily occaſions, is unable to ſupport its luſtre. It ſtops ſhort, without generalizing, at the ſenſible effects of this inviſible cauſe. They believe, from a ſentiment natural to weak minds, that the objects of their religious worſhip will be at their diſpoſal, in proportion as they are within their reach. Hence it is that the devotions of the common people, in every country, are preſented in the fields, and have natural objects for their centre. It always attracts the religion of the peaſantry. A hermitage on the ſide of a mountain, a chapel at the ſource of a ſtream, a good image of the Virgin, in wood, niched in the trunk of an oak, or under the foliage of a hawthorn, have, to them, a much more powerful attraction than the gilded altars of our Cathedrals. I except thoſe, however, whom the love of money has completely debauched, for ſuch perſons muſt have ſaints of ſilver, even in the country.

The principal religious acts of the people in Turkey, in Perſia, in the Indies and in China, are pilgrimages in the fields. The rich, on the contrary, prevented in all their wants and wiſhes by men, no longer look up to GOD for any thing. Their whole life is paſſed within doors, where they ſee only the productions of human induſtry, luſtres, wax candles, mirrors, ſecretaries, paraſites, books, wits. They come inſenſibly to loſe ſight of Nature; whoſe productions are, beſides, almoſt always exhibited to them disfigured, or out of ſeaſon, and always as an effect of the art of their gardeners, or artiſans.

They fail not, likewiſe, to interpret her ſublime operations, by the mechaniſm of the arts moſt familiar to them. Hence ſo many ſyſtems, which eaſily enable you to gueſs at the occupation of their authors. Epicurus, exhauſted by voluptuouſneſs, framed his world and his atoms, with

which Providence has nothing to do, out of his own apathy, the Geometrician forms it with his compaſſes; the Chemiſt compounds it of ſalts; the Mineralogiſt extracts it from the fire; and they who apply themſelves to nothing, and theſe are not few in number, ſuppoſe it, like themſelves, in a ſtate of chaos, and moving at random.

Thus, the corruption of the heart is the original ſource of our errors. Afterwards, the Sciences employing, in the inveſtigation of natural things, definitions, principles, methods, inveſted with a great geometrical apparatus, ſeem, by this pretended order, to reduce to order what widely deviates from it. But ſuppoſing this order to exiſt, ſuch as they preſent it to us, of what uſe could it be to Man? Would it be ſufficient to reſtrain, and to conſole, the miſerable; and what intereſt will they take in that of a ſociety which tramples them under foot, when they have nothing to hope from that of Nature, who abandons them to the laws of motion?

I now proceed to anſwer, one after another, the objections, formerly ſtated, againſt Providence, founded on the diſorders of the Globe; of vegetables, of animals, of Man, and on the nature of GOD himſelf.

Replies to the Objections againſt Providence, founded on the Diſorders of the Globe.

Though my ignorance of the means employed by Nature, in the government of the World, is greater than I am able to expreſs; it is ſufficient, however, to throw one's eyes on a geographical chart, and to have read a little, to be enabled to demonſtrate that thoſe, by which her operations are pretendedly explained to us, have no foundation in truth. From human inſufficiency ſpring the objections levelled at the divine Providence.

Firſt, it appears to me, no more natural to compoſe the uniform motion of the Earth through the Heavens, of the two motions of projection and attraction, than to attribute to ſimilar cauſes, that of a man walking on the Earth. The centrifugal and centripetal forces ſeem, to me, no more to exiſt in the Heavens, than the two circles denominated the Equator and the Zodiac. However ingenious theſe hypotheſes may be, they are only ſcaffoldings imagined by men of genius, for rearing the fabric of Science, but which no more aſſiſt us in penetrating into the ſanctuary of Nature, than thoſe employed in the conſtruction of our churches, can introduce us into the ſanctuary of Religion. Theſe combined forces are no more the moving principle of the courſe of the ſtars, than the circles of the ſphere are their barriers. They are ſigns merely, which have, at laſt, uſurped the place of the objects which they were intended only to repreſent, like every thing elſe of human eſtabliſhment.

If a centrifugal force had ſwelled the mountains of the Globe, when it was in a ſtate of fuſion, there muſt have been mountains much more elevated than the Andes of Peru and Chili. That of Chimboraco, which is the higheſt of them, is only 3220, or 3350 fathoms in height, for the Sciences are not perfectly agreed, even in matters of obſervation. This elevation, which is nearly the greateſt known on Earth, is leſs perceptible on it than the third part of a line would be on a globe of ſix feet diameter. Now, a maſs of melted metal preſents, in proportion to its ſize, ſcorias much more conſiderable. Look at the anfractuoſities of a ſimple morſel of iron droſs. What frightful ſwellings, then, muſt have been formed on a globe, of heterogeneous and fermenting materials, more than three thouſand leagues thick? The Moon, whoſe diameter is much leſs conſiderable, contains, according to *Caſſini*, mountains three leagues high. But what would

be the caſe if, with the action of the heterogeneouſneſs of our terreſtrial materials, all in fuſion, we ſhould beſides ſuppoſe that of a centrifugal force, produced by the Earth's rotatory motion round its axis? I imagine that this force muſt have been neceſſarily exerted in the direction of its Equator, and inſtead of forming it into a globe, muſt have flattened it out in the Heavens, like thoſe large plates of glaſs which glaſs blowers expand with their breath.

Not only the diameter of the Earth, at the Equator, is no greater than under its Meridians, but the mountains there are not more elevated than elſewhere. The noted Andes of Peru have not their commencement at the Equator, but ſeveral degrees beyond it, toward the South; and coaſting along Peru, Chili, and Magellan's land, ſtop at the fifty fifth degree of Southern Latitude, in the Terra del Fuego, where they preſent to the Ocean a promontory of eternal ice, of a prodigious height. Through the whole extent of this immenſe track, they never open but at the Straits of Magellan, forming throughout, according to the teſtimony of *Garcillaſo de la Véga*,* a rampart fortified with pyramids of ice, inacceſſible to men, to quadrupeds and even to birds.

The mountains of the iſthmus of Panama, on the contrary, which are nearly under the Line, have an elevation ſo ſmall, in compariſon with the Andes, that Admiral *Anſon*, who had coaſted along the whole, relates, that on his arriving at theſe heights, he experienced ſtifling heats, becauſe the air, ſays he, was not refreſhed by the Atmoſphere of the lofty mountains of Chili and Peru.

The higheſt mountains of Aſia are entirely out of the Tropics. The chain, known by the names of Taurus and Imäus, commences, in Africa, at Mount Atlas, toward the thirtieth degree of northern latitude. It runs acroſs all Africa and all Aſia, between the thirtyeighth and for-

* Hiſtory of the Incas. Book I. chap. 8.

tieth degree of north latitude, having its ſummit covered, for the moſt part, through that immenſe extent, with ſnows that never melt; a proof, as ſhall afterwards be demonſtrated, of a very conſiderable elevation.

Mount Ararat, which makes part of this chain, is, perhaps, more elevated than any mountain of the New World, if we form a judgment from the time which *Tournefort*, and other travellers, took to perform the diſtance from the baſis of that mountain, up to the commencement of the ſnow which covers its ſummit, and, which is leſs arbitrary, from the diſtance at which it may be ſeen, and that is, at leaſt, ſix days' journey of a caravan.

The Peak of Teneriff is viſible forty leagues off. The mountains of Norway called Felices, and, by ſome, the Alps of the North, are viſible at ſea fifty leagues diſtant; and, if we may believe an ingenious Swediſh Geographer, are three thouſand fathoms high.

The peaks of Spitzberghen, of New Zealand, of the Alps, of the Pyrennées, of Switzerland, and thoſe on which ice is found all the year round, are exceedingly elevated, though moſt of them very remote from the Equator. They do not even run in directions parallel to that circle, as muſt have been the caſe, on the ſuppoſition of the effect produced by the rotation of the Globe; for if the chain of Taurus, in the ancient Continent, runs from Weſt to Eaſt, that of the Andes, in the new, runs from North to South. Other chains proceed in other directions.

But if the pretended centrifugal force had, once, the power of heaving up mountains, why does it not poſſeſs, at this day, the power of toſſing up a ſtraw into the air? It ought not to leave a ſingle detached body on the ſurface of the Earth. They are affixed to it, I ſhall be told, by the centripetal force of gravity. But if this laſt power, in fact, forces every body toward it, why have not the

mountains too ſubmitted to this univerſal law, when they were in a ſtate of fuſion? I cannot conceive what reply can be made to this twofold objection.

The ſea appears, to me, not more adapted to the formation of mountains, than the centrifugal force is. How is it poſſible to imagine the poſſibility of its having thrown them out of its womb? It is incontrovertible, however, that marbles, and calcareous ſtones, which are only paſtes of madrépores and of ſhells amalgamated; that flints, which are concretions of theſe; that marles, which are a diſſolution of them; and that all marine bodies, which are found in every part of both Continents, have iſſued out of the Sea. Theſe matters ſerve as a baſis to great part of Europe; hills of a very conſiderable height are compoſed of them, and they are found in many parts of both the Old and New Worlds, at an equal degree of elevation. But their ſtrata cannot be explained by any of the actual movements of the Ocean. In vain would we aſcribe to it revolutions from Weſt to Eaſt; never will it have the power of raiſing any thing above its level. If certain ports of the Mediterranean are produced as inſtances, which the Sea has actually left dry, it is no leſs certain, that there is a much greater number, on the ſame coaſts, which the water has not deſerted. Hear what is ſaid on the ſubject by that judicious Obſerver *Maundrel*, in his journey from Aleppo to Jeruſalem, in 1669: "In "the Adriatic Gulf, the lighthouſe of Arminium, or Rim"ini, is a league from the ſea; but Ancona, built by "the Syracuſans, is ſtill cloſe to the ſhore. The arch "of Trajan, which rendered its port more commodious "for merchants, is ſituated immediately upon it. Be"ritta, the favourite ſpot of Auguſtus, who gave it the "name of *Julia Felix*, preſerves no remains of its an"cient beauty, except its ſituation on the brink of the Sea,

" above which it is elevated no higher than is neceſſary " to ſecure it againſt the inundations of that element."

The teſtimony of travellers the moſt accurate, is conformable to that of this ingenious Engliſh gentleman. His compatriot, *Richard Pocock*, who travelled into Egypt in 1737, with leſs taſte, but with ſtill greater accuracy, atteſts, that the Mediterranean has gained fully as much ground as it has loſt.* " Nothing more is neceſ- " ſary," ſays he, " to produce a conviction of this, than " to examine the coaſt; for you will ſee, under water, " not only a variety of artificial productions, manufac- " tured in the rock, but, likewiſe, the ruins of many ed- " ifices. About two miles from Alexandria, are to be " ſeen, under water, the ruins of an ancient temple."

An anonymous Engliſh traveller, in the journal of a voyage ſtored with excellent obſervations, deſcribes ſeveral very ancient cities of the Archipelago, ſuch as Samos, the ruins of which are cloſe to the Sea. Hear what he ſays of Delos, which is, as every one knows, in the centre of the Cyclades.† " We found nothing elſe, all " along the coaſt, but the remains of ſuperb edifices, which " had never been completed, and the ruins of others " which have been deſtroyed. The Sea appears to have " gained on the Iſle of Delos; and the water being clear, " and the weather calm, we had an opportunity of ob- " ſerving the remains of beautiful buildings, in places " where now the fiſhes ſwim at their eaſe, and on which " the ſmall boats of theſe cantons row, to get at the " coaſt.

The ports of Marſeilles, Carthage, Malta, Rhodes, Cadiz, &c. are ſtill frequented by Navigators, as they were in the remoteſt Antiquity. The Mediterranean could

* Travels into Egypt. Vol. I. page 4 and 30.

† Voyage into France, Italy and the Iſlands of the Archipelago, in 1763. Vol. iv. Letter cxxvii, page 256.

not have ſunk at any one point of its ſhores, without ſinking at every other, for water in the baſon always comes to its level. This reaſoning may be extended to all the coaſts of the Ocean. If there are found any where tracks of land abandoned, it is not becauſe the ſea retires, but becauſe the Earth is gaining ground. This is the effect of alluſions, occaſioned frequently by the overflowing of rivers, and ſometimes by the ill adviſed labours of Man. The encroachments of the Sea on the Land are equally local; and are the effect of earthquakes, which can be extended to no great diſtance. As theſe reciprocal invaſions of the two Elements are particular, and frequently in oppoſition on the ſame coaſts which have, in other reſpects, conſtantly preſerved their ancient level, it is impoſſible to deduce from them any general law for the movements of the Ocean.

We ſhall preſently examine, how ſo many marine foſſils could have been extracted from its bed; and I confidently believe that, conformably to reſpectable traditions, we ſhall be able to advance ſomething on this ſubject, not unworthy of the Reader's attention. To return, then, to other mountains, ſuch as thoſe of granite, which are the higheſt on the Globe, and the formation of which has not been imputed to the Sea, becauſe they contain no depoſit to atteſt ſuch tranſition, the ſame Naturaliſts employ another ſyſtem to account for their origin. They ſuppoſe a primitive Earth, whoſe height equalled that of the preſent elevation of the higheſt peaks of the Andes, of Mount Taurus, of the Alps, &c. which remains ſo many evidences of the exiſtence of that primeval ſoil: After this, they employ ſnows, rains, winds, and I know not what beſides, to lower this original Continent down to the brink of the Sea; ſo that we inhabit only the bottom of this enormous quagmire. This idea has an impoſing air; firſt, becauſe it terrifies; and then, becauſe it is conformable

to that picture of apparent ruin which the Globe preſents: But it vaniſhes away before this ſimple queſtion, What has become of the earth and the rocks of this tremendous ridance?

If it is ſaid, they have been thrown into the Sea, we muſt ſuppoſe, prior to all degradation, the exiſtence of the bed of the Sea, and its excavation would then preſent a great many other difficulties. But let us admit it. How comes it that theſe ruins have not, in part, accumulated? Why has not the Sea overflowed? How can it have happened, on the contrary, that it ſhould have deſerted ſuch immenſe tracks of land, as are ſufficient to form the greateſt part of two vaſt Continents? Our ſyſtems, therefore, cannot account for the ſteepy elevation of mountains of granite, by any kind of degradation, becauſe they know not how to diſpoſe of the fragments; nor for the formation of calcareous mountains, by the movements of the Ocean, becauſe, in its actual ſtate, it is incapable of covering them.

Beſides, it is not an opinion of yeſterday, that Philoſophers have conſidered the Earth as a decaying edifice. Hear what Baron *Buſbequius* ſays of the opinion of *Polybius*, in his curious and entertaining letters: "*Polybius* "pretends to have proved, that the entrance of the "Black Sea would, in proceſs of time, be choked by the "banks of ſand, and by the mud, which the Danube and "the Boriſthenes were conſtantly forcing into it: And "that, conſequently, the Black Sea would be rendered "inacceſſible, and its commerce entirely deſtroyed. The "ſea of Pontus, nevertheleſs, is juſt as navigable at this "hour as in the days of *Polybius*.*"

Bays, gulfs, and Mediterranean ſeas, are no more the effects of irruptions of the Ocean into the Land, than mountains are productions of the centrifugal motion.

* Letter I, page 131.

Theſe pretended diſorders are neceſſary to the harmony of all the parts of the Earth. Let us ſuppoſe, for example, that the Straits of Gibraltar were cloſed, as it has been ſaid was formerly the caſe, and that the Mediterranean exiſted no longer. What would become of ſo many rivers of Europe, Aſia and Africa, which are kept flowing by the vapours which aſcend out of that Sea, and bring back their waters to it, in a wonderful exactneſs of proportion, as the calculations of many ingenious men have demonſtrated? The North winds, which conſtantly refreſh Egypt in Summer, and which convey the emanations of the Mediterranean as far as the mountains of Ethiopia, to ſupply the ſources of the Nile, blowing, in this caſe, over a ſpace deſtitute of water, would carry drought and barrenneſs over all the northern regions of Africa, and even, into the interior of that Continent.

The ſouthern parts of Europe would fare ſtill worſe; for the hot and parching winds of Africa, which load themſelves with ſo many rainy clouds, as they croſs the Mediterranean, now blowing over the dry bed of that Sea, without tempering the heat by humidity of any kind, would blaſt, with ſcorching ſterility, all that vaſt region of Europe, which extends from the Straits of Gibralter to the Euxine Sea, and utterly dry up all the countries through which, at preſent, flow a multitude of rivers, ſuch as the Rhone, the Po, the Danube, &c.

Beſides, it is not ſufficient to ſuppoſe, that the Ocean forced a paſſage into the bed of the Mediterranean, as a river ſpreads over a champaign country, after having overflowed its banks; it muſt farther be ſuppoſed, that the track of land inundated was lower than the Ocean, a phenomenon not to be met with in any other part of the *terra firma*, all of which is above the level of the Sea, thoſe parts excepted which have been wreſted from the

Deep by means of human induſtry, as is the caſe in Holland.

It muſt ſtill farther be ſuppoſed, that a lateral ſinking of the Earth muſt have taken place all round the baſon of the Mediterranean, to regulate the circuits, declivities, canals and windings of ſo many rivers, which come from ſuch a diſtance to empty themſelves into it, and that this ſinking muſt have been effected with admirable proportions: For theſe rivers, iſſuing, in many caſes, from one and the ſame mountain, arrive, by the ſame declivities, to diſtances widely different, without their channels ceaſing to be full, or their waters flowing too faſt or too ſlow, notwithſtanding the difference of their courſes and levels.

It is not, then, to an irruption of the Ocean that we are to aſcribe the Mediterranean, but to an excavation of the Globe, more than twelve hundred leagues long, and above eight hundred broad, which has been executed with diſpoſitions ſo happy, and ſo favourable to the circulation of ſo many lateral rivers, that if time permitted me to trace the courſe of any ſingle one, it would be evident how deſtitute of all foundation the ſuppoſition is which I am combating. Earthquakes, indeed, produce excavations, but of ſmall extent; and which, far from forming channels for rivers, ſometimes abſorb the courſe of rivulets, and change them into pools, or marſhes. Theſe hypotheſes may be applied to all gulfs, bays, great lakes and Mediterranean ſeas; and we ſhall be convinced, that if theſe interior waters did not exiſt, not a fountain would remain in the greateſt part of the habitable Globe.

If we would form a juſt idea of the order of Nature, we muſt give up our circumſcribed ideas of human order. We muſt renounce the plans of our Architecture, which frequently employs ſtraight lines, that the weakneſs of our ſight may be enabled to take in the whole extent of our domain at a ſingle glance; which ſymmetrizes all our

diſtributions, and which, in conſtructing our houſes, places wings to the right, and wings to the left, that all the parts of our habitation may be comprehended in a ſingle view, while we occupy the centre; and which levels, fits to the plummet, ſmooths and poliſhes the ſtones employed in building, that the monuments we raiſe may be ſoft to the eye and to the touch. The harmonies of Nature are not thoſe of a Sybarite; but they are thoſe of Mankind, and of all beings. When Nature raiſes a rock, ſhe introduces clefts, inequalities, points, perforations. She hollows and roughens it with the chiſel of Time, and of the Elements; ſhe plants herbs and trees upon it; ſhe ſtores it with animals, and places it in the boſom of the Sea, in the very focus of ſtorms and tempeſts, that it may there afford an aſylum to the inhabitants of the Air and of the Waters.

When Nature, in like manner intended to ſcoop out baſons to receive the Seas, ſhe neither rounded the borders, nor applied the line to them; but contrived and produced deep bays, ſheltered from the general currents of the Ocean, that, during ſtormy weather, the rivers might diſcharge themſelves into it in ſecurity; that the finny legions might reſort thither, for refuge, at all ſeaſons, there lick up the alluvion of the earth, carried down by the freſh water; come thither to ſpawn, mounting upward and upward, many of them, toward the very ſource, where they can find both food and ſhelter for their young. And for the preſervation of theſe adaptations it is, that Nature has fortified every ſhore with long banks of ſand, ſhelves, enormous rocks and iſlands, which are arranged round them, at proper diſtances, to protect them from the fury of the Ocean.

She has employed ſimilar diſpoſitions in forming the beds of rivers, as we ſhall ſhew in the ſequel of this Study, though we have room only to glance at a ſubject ſo new

and ſo fertile in obſervation. Accordingly, ſhe has made the current of rivers to flow, not in a ſtraight line, as they muſt have run, had the laws of Hydraulics been obſerved, becauſe of the tendency of their motions toward a ſingle point; but ſhe makes them wind about for a long time through the boſom of the Land, before they pour themſelves into the Sea.

In order to regulate the courſe of theſe rivers, and to accelerate or retard it, conformably to the level of the countries through which they flow, ſhe pours into them lateral rivers, which accelerate it in a flat country, when they form an acute angle with the ſource of the main river; or which retard it in a mountainous country, by forming a right, and ſometimes an obtuſe, angle, with the ſource of the principal ſtream. Theſe laws are ſo infallible, that a judgment may be formed, ſimply from the map, whether the rivers which water any country are ſlow or rapid, and whether that country is flat or elevated, by the angle which the confluent rivers form with their courſes.

Thus, moſt of thoſe which throw themſelves into the Rhone, form right angles with that rapid river, to check its impetuoſity. Some of theſe confluent rivers are real dikes, which croſs the main river from ſide to ſide, in ſuch a manner, that the river croſſed, which was running very rapidly above the confluence, flows very gently below it. This obſervation applies to many of the rivers of America, and remarkably to the Méchaſſipi. From theſe ſimple perceptions, which I have, at preſent, only time to indicate, it may be concluded, that it is eaſy to retard, or accelerate the courſe of a river, by ſimply changing the angle of incidence of its confluent rivers. I produce this not as a matter of advice, but as a very curious ſpeculation; for it is always dangerous for Man to derange the plans of Nature.

The rivers, on throwing themſelves into the Sea, produce, in their turn, by the direction of their mouths, acceleration, or retardation, in the courſe of the tides. But I muſt not launch farther out into the ſtudy of theſe grand and ſublime harmonies, I ſatisfy myſelf with having ſaid enough to convince the candid Reader, that the bed of the Seas was ſcooped out, expreſsly for receiving them.

Nevertheleſs, I muſt produce one argument more, calculated to remove every poſſibility of doubt on the ſubject. Had the bed of the Seas been formed, as is ſuppoſed, by a ſinking down of the ſolid parts of the Globe, the ſhores of the Sea, under water, would have the ſame declivities with the adjoining Continent. Now, this is not found to be the caſe on any coaſt whatever. The declivity of the baſon of the Sea is much ſteeper than that of the bounding lands, and by no means a prolongation of it. Paris, for example, is raiſed above the level of the Sea, about 26 fathoms, reckoning from the baſe of the bridge of *Notre Dame*. The Seine, accordingly, from this point, to where it empties itſelf into the Sea, has a declivity of little more than 130 feet, in a diſtance of forty leagues; whereas, meaſuring from the mouth of the river, out into the ſea, only a league and a half, you find, at once, an inclination of from 60 to 80 fathom, for this is the depth at which veſſels anchor, in the road of Havre de Grace.

Theſe differences of level at Land, from the level of the bed of the Sea, in the ſame line of direction, are to be met with on all coaſts, more or leſs. Dampier, an Engliſh Navigator, has, indeed, obſerved, that Seas which waſh ſteep coaſts are much deeper; and that along flat ſhores their depth is ſmall; but this ſtriking difference is univerſally obſervable, that along flat coaſts, the bed of the Sea is much more inclined than the ſoil of the ad-

joining Continent, and that along high lands, ſometimes, no bottom is to be found.

This clearly demonſtrates, therefore, that the beds of the Seas were hollowed out expreſsly to contain them. The declivity of their excavations has been regulated by laws infinitely wiſe; for if it were the ſame with that of the adjacent Lands, the billows of the Sea, whenever the wind blew toward the ſhore, however lightly, would conſiderably encroach on the Land. This actually happens in the caſe of ſtorms and extraordinary tides, the waves overflow their uſual bounds; for then, meeting a declivity flat and gentle, compared to that of their bed, they ſometimes inundate the Land to the diſtance of ſeveral leagues. This happens, from time to time, in the iſland of Formoſa, the natural ramparts of which, ſuch as the Manglier, the inhabitants, it is probable, formerly deſtroyed. Holland, for nearly a ſimilar reaſon, is expoſed to inundations, becauſe it has encroached on the very bed of the Sea.

It is principally on the ſhores of the Ocean that the inviſible boundary is fixed, which the AUTHOR of Nature has preſcribed to its waves. It is there you perceive, that you are at the interſection of two different planes, the one of which terminates the declivity of the Land, and the other commences that of the Sea.

It cannot be alleged, that it was by currents of the Sea the bed was hollowed out; for where could the earth that filled it before be depoſited? They could raiſe nothing above their own level. It cannot even be alleged, that the channels of rivers have been excavated by the current of their own ſtreams; for there are ſeveral which have found a ſubterraneous paſſage through maſſes of ſolid rock, ſo hard and ſo thick, as to bid defiance to the pickaxes and the mattocks of our labourers. Beſides, on the ſuppoſition which we are examining, theſe rivers muſt have formed, at the place of their falling into the Ocean, banks

of ſand, and accumulations of earthy ſubſtances, of a magnitude proportional to the quantity of ground which they muſt have cleared away, in forming their channels. Moſt of them, on the contrary, as has been already obſerved, empty themſelves at the bottom of bays, hollowed for the expreſs purpoſe of receiving them.

How is it that they have not completely filled up theſe bays, as they are inceſſantly hurling down into them ſubſtances ſeparated from the land? Why is not the very bed of the Ocean choked up, from the conſtant accumulation of the ſpoils of vegetables, ſands, rocks, and the wreck of earth, which, on every ſhower that falls, tinge with yellow the rivers which fall into it? The waters of the Ocean have not riſen a ſingle inch ſince Man began to make obſervations, as might eaſily be demonſtrated from the ſtate of the moſt ancient ſeaports of the Globe, which are ſtill, for the moſt part, at the ſame level.

Time permits me not to ſpeak of the means employed by Nature for the conſtruction, the ſupport, and the purification, of this immenſe baſon: They would ſuggeſt freſh ſubject of admiration. Enough has been ſaid to prove, that what in Nature may appear to us the effect of ruin, or chance, is, in many caſes, the reſult of intelligence the moſt profound. Not only, no hair falls from our head, and no ſparrow from Heaven to the ground, but not a pebble rolls on the ſhore of the Ocean, without the permiſſion of GOD: According to that ſublime expreſſion of Job: *Tempus poſuit tenebris, & univerſorum finem Ipſe conſiderat, lapidem quoque caliginis, & umbram mortis.** "He ſetteth an end to darkneſs, and ſearcheth out all perfection; the ſtones of darkneſs, and the ſhadow of death:" He likewiſe knows the moment when that ſtone, buried in darkneſs, muſt ſpring into light, to ſerve as a monument to the Nations.

* Job xxviii. 3.

Independent of geographical proofs, without number, which demonſtrate, that the Ocean, by its irruptions, has not hollowed out one ſingle bay on the face of the Globe, nor detached any one part of the Continent from the reſt, there are ſtill many more which may be deduced from the vegetable and animal kingdoms, and from Man.

This is not the proper place for dwelling on the ſubject: But I ſhall quote, on my way, an obſervation from the vegetable World, which proves, for example, that Britain never was united to the European Continent, as has been ſuppoſed, but muſt have been, from the beginning, ſeparated by the Channel. It is a remark of Cæſar's, in his Commentaries, that during his ſtay in that Iſland, he had never ſeen either the beech tree or the fir; though theſe trees were very common in Gaul, along the banks of the Seine, and of the Rhine. If, therefore, theſe rivers had ever flowed through any part of Britain, they muſt have carried with them, the ſeeds of the vegetables, which grew at their ſources, or upon their banks. The beech and the fir, which, at this day, thrive exceedingly well in Britain, muſt, of neceſſity, have been found growing there in the time of Julius Cæſar, eſpecially as they would not have changed their Latitude, and being, as we ſhall ſee, in the proper place, of the genus of fluviatic trees, the ſeeds of which reſow themſelves, through the aſſiſtance of the waters. Beſides, from whence could the Seine, the Rhine, the Thames, and ſo many other rivers, whoſe currents are ſupplied from the emanations of the Channel, from whence, I ſay, could they have been fed with water? The Thames, then, muſt have flowed through France, or the Seine through England; or, to ſpeak more conformably to truth and nature, the countries now watered by theſe rivers, would have been completely dry.

By our geographical charts, as by moſt other inſtruments of Science, we are miſled. Obſerving in theſe ſe

many retreatings and projections along the coasts of the Continent, we have been induced to imagine, that these irregularities must have been occasioned by violent Currents of the Sea. It has just been demonstrated, that this effect *was* not thus produced; I now proceed to shew, that it *could not possibly* have been the case.

The English *Dampier*, who is not the first Navigator that sailed round the Globe, but who is, in my opinion, the best of the travellers who have made observations on it, says, in his excellent treatise on winds, and tides: * "Bays scarcely have any currents, or if there be such a "thing, they are only counter currents running from one "point to another." He quotes many observations, in proof of this, and many others, of a similar nature, are found scattered over the journals of other Navigators. Though he has treated only of the Currents between the Tropics, and even that with some degree of obscurity, we shall proceed to generalize this principle, and to apply it to the principal bays of Continents.

I reduce to two general Currents, those of the Ocean. Both of these proceed from the Poles, and are produced, in my opinion, by the alternate fusion of their ices. Though this be not the place to examine the cause of it, to me it appears so natural, so new, and of such curious investigation, that the Reader, I flatter myself, will not be angry with me, if I give him an idea of it, on my way.

The Poles appear to me the sources of the Sea, as the icy mountains are the sources of the principal rivers. It is, if I am not mistaken, the snow and the ice which cover our Pole, that annually renovate the waters of the Sea, comprehended between our Continent and that of America, the projecting and retreating parts of which have, besides, a mutual correspondence, like the banks of a river.

* Vol. ii. page 385.

It may be remarked, at firſt ſight, on a map of the World, that the bed of the Atlantic Ocean becomes narrower and narrower toward the North, and widens toward the South; and that the prominent part of Africa correſponds to that great retreating part of America, at the bottom of which is ſituated the Gulf of Mexico; as the prominent part of South America correſponds to the vaſt Gulf of Guinea; ſo that this baſon has, in its configuration, the proportions, the ſinuoſities, the ſource and the mouth, of a vaſt fluviatic channel.

Let us now obſerve, that the ices and ſnows form, in the month of January, on our Hemiſphere, a cupola, the arch of which extends more than two thouſand leagues over the two Continents, with a thickneſs of ſome lines in Spain, of ſome inches in France, of ſeveral feet in Germany, of ſeveral fathoms in Ruſſia, and of ſome hundreds of feet beyond the ſixtieth degree of Latitude, ſuch as the ices which *Henry Ellis*,* and other navigators of the North encountered there at Sea, even in the midſt of Summer, and of which ſome, if *Ellis* is to be believed, were from fifteen to eighteen hundred feet above its level; for their elevation muſt probably go on increaſing, up to the very Pole, in conformity to the proportions obſervable in thoſe which cover the ſummits of our icy mountains; which muſt give them, under the very Pole, a height which there is no poſſibility of determining.

From this ſimple outline, it is clearly perceptible what an enormous aggregation of water is fixed, by the cold of Winter, in our hemiſphere, above the level of the Ocean. It is ſo very conſiderable, that I think myſelf warranted to aſcribe to the periodical fuſion of this ice, the general movement of our Ocean, and that of the tides. We may apply, in like manner, the effects of the fuſion of the

* Ellis's Voyage to Hudſon's Bay.

ices of the South Pole, which are there ſtill more enormous, to the movements of its Ocean.

No concluſion has, hitherto, been drawn, relatively to the movements of the Sea, from the two maſſes of ice ſo conſiderable, alternately accumulated and diſſolved at the two Poles of the World. They neceſſarily muſt, however, occaſion a very perceptible augmentation of its waters, on their return to it, by the action of the Sun, which partly melts them once every year; and a great diminution, on being withdrawn, by the effect of the evaporations, which reduce them to ice at the Poles, when the Sun retires.

I proceed to lay before the Reader, ſome obſervations and reflections on this ſubject, which I have the confidence to call highly intereſting; and ſhall ſubmit the deciſion to thoſe who have not got into the trammels of ſyſtem and party. I ſhall endeavour to abridge them to the utmoſt of my power, and flatter myſelf with the hope of forgiveneſs, at leaſt, in conſideration of their novelty. I am going to deduce, merely from the alternate diſſolution of the polar ices, the general movements of the Seas, which have hitherto been aſcribed to gravitation, or to the attraction of the Sun, and of the Moon, on the Equator.

It is impoſſible to deny, in the firſt place, that the Currents and the Tides come from the Pole, in the vicinity of the polar Circle.

Frederic Martens, who, in his voyage to Spitzbergen, in 1671, advanced as far as to the eightyfirſt degree of northern Latitude, poſitively aſſerts, that the Currents, amidſt the ices, ſet in toward the South. He adds, farther, that he can affirm nothing with certainty reſpecting the flux and reflux of the Tides. Let this be carefully remarked.

Henry Ellis obſerved, with aſtoniſhment, in his voyage to Hudſon's Bay, in 1746, and 1747, that the Tides there came from the North, and that they were accelerated, inſtead of being retarded, in proportion as the Latitude increaſed. He aſſures us that theſe effects, ſo contrary to their effects on our coaſts, where they come from the South, demonſtrate that the Tides, in thoſe high Latitudes, do not come from the Line, nor from the Atlantic Ocean. He aſcribes them to a pretended communication between Hudſon's Bay and the South Sea: A communication which, with much ardor, he ſought for, and which was, indeed, the object of his voyage; but now we have complete aſſurance that it does not exiſt, from the fruitleſs attempts lately made by *Captain Cook* to find it by the South Sea, to the north of California, in conformity to the advice, long before given reſpecting it, by the illuſtrious Navigator *Dampier*, whoſe ſagacity and obſervations have, by the by, greatly aſſiſted *Captain Cook* in all his diſcoveries.

Ellis farther obſerved, that the courſe of theſe northern Tides of America, was ſo violent, at *Wager*'s Strait, which is about 65° 37′ North Latitude, that it ran at the rate of from eight to ten leagues an hour. He compares it to the ſluice of a mill. He remarked that the ſurface of the water was there very ſmooth, which puzzled him exceedingly, by damping his hope of a communication between this Bay and the South Sea. He remained, nevertheleſs, convinced of the exiſtence of ſuch a paſſage; ſuch is the pertinacity of Man in favour of preconceived opinions, in the very face of evidence.

John Huguez de Linſchotten, a Dutchman, had made nearly the ſame remarks on the currents of the northern Tides of Europe,* when he was at Waigat's Strait, at 70°

* See the firſt and Second Voyages to *Waigats*, by *H. J. Linſchotten*. Voyages to the North, vol. iv. page 204.

20′ North Latitude. In the two voyages which that exact Obſerver made to this Strait, in 1594 and 1595, undertaken in the view of diſcovering a paſſage to China by the North of Europe, he repeated the ſame obſervations: "We "obſerved," ſays he, "once more, from the courſe of "the tide, what we had already remarked with much exactneſs, that it comes from the Eaſt." He likewiſe obſerved, that there the water was brackiſh, or half ſalt; this he aſcribes to the fuſion of a prodigious quantity of floating ice, which ſtopped his paſſage at Waigat's Strait; for the ice formed even of ſea water is freſh. But *Linſchotten* draws no concluſion, any more than *Ellis*, from theſe tides of water half freſh, which deſcend from the North; and full of his object, like the Engliſh Navigator, he aſcribes them to a Sea, which he ſuppoſes opens to the Eaſt, beyond Waigat's Strait, through which he propoſed to find his way to China.

His compatriot, the unfortunate *William Barents*,* who made the ſame voyages in the ſame fleet, but in another veſſel, and who ended his days on the northern coaſts of Nova Zembla, where he had wintered, found, to the North and to the South of that iſland, a perpetual current of ice, ſetting in from the Eaſt, with a rapidity, which he compares, as *Ellis* does, to a ſluice. Some of theſe ices were to 36 fathoms of depth under water, and 16 fathoms high above the ſurface. This was at Waigat's Strait, in the months of July and Auguſt. He found there ſome Ruſſian fiſhermen from Petzorah, who navigated theſe Seas, covered with floating rocks of ice, in a boat made of the bark of trees ſewed together. Theſe poor people made preſents of fat geeſe to the Dutch mariners, with ſtrong demonſtrations of friendſhip; for calamity has, in all Climates, a powerful tendency to concili-

* Conſult the ſecond and third Voyages of the Dutch by the North, in the firſt volume of the Voyages of the Eaſtindia Company.

ate affection between man and man. They informed him, that this ſame Strait of Waigat's, which was then diſgorging ſuch immenſe quantities of ice, would be entirely ſhut up toward the end of October, and that it would be poſſible to go into Tartary over the ice, by what they called the Sea of Marmara.

It is incontrovertible, that all theſe effects which I have been relating, can proceed only from the effuſions of the ices which ſurround the Pole. I ſhall here remark, by the way, that theſe ices, which flow with ſuch rapidity to the north of America and of Europe, towards the months of July and Auguſt, greatly contribute to our high equinoctial tides, in September; and that when their effuſions are ſtopped in the month of October, like thoſe of Waigat's, this too is the time when our Tides begin to diminiſh.

I may now be aſked, Why the tides come from the North and the Eaſt to the North of America, and of Europe; and from the South, on our coaſts, and on thoſe of America which are under the ſame Latitudes?

I might ſatisfy myſelf with having ſaid enough to demonſtrate, that all the Tides do not proceed from the preſſure, or the attraction of the Sun, and of the Moon, on the Equator? I ſhould have proved the imperfection of our ſcientific ſyſtems which aſcribe them to theſe cauſes: But I proceed to repair what I have been pulling down, by other obſervations; and to demonſtrate that there is no one Tide, on any coaſt whatever, but what owes its origin to polar effuſions.

An obſervation of *Dampier*'s* will ſerve, at firſt, as a baſis to my reaſonings. That careful and ingenious obſerver diſtinguiſhes between Currents and Tides. He lays it down as a principle, founded on many experiments, of which he gives the hiſtory, that *Currents are*

* See *Dampier*'s Treatiſe on Winds and Tides.

ſcarcely ever felt but out at Sea, and Tides upon the Coaſts. This being laid down; the polar effuſions, which are the Tides of the North and of the Eaſt, to thoſe who are in the vicinity of the Poles, or of bays which have a communication with it, take their general courſe to the middle of the channel of the Atlantic Ocean, attracted toward the Line by the diminution of the waters, which the Sun is there inceſſantly evaporating. They produce, by their general Current, two contrary Currents, or collateral Whirlpools, ſimilar to thoſe which rivers produce on their banks.

I am not taking for granted, without any foundation, the exiſtence of theſe counter currents, or *vortices*, after the manner of Syſtem makers, who create new cauſes, in proportion as Nature preſents them with new effects. Theſe *vortices* are hydraulic reactions, the laws of which Geometry explains, and the reality of which is completely aſcertained by experience. If you look at a ſmall running brook, you will frequently ſee ſtraws floating along the brink, and carried upward in a direction oppoſite to the general current of the ſtream; and on arriving at the points, where the counter currents croſs the general, you obſerve them agitated by theſe two oppoſed powers turning and ſpinning round a conſiderable time, till they are at laſt carried down the general current.

Theſe counter currents are ſtill more perceptible, when ſuch a rivulet flows through a baſon which has itſelf no flux; for the reaction is, in that caſe, ſo conſiderable round the whole circumference of the baſon, that the counter currents carry about all bodies floating in it, to the very place where the rivulet diſengages itſelf.

Theſe lateral counter currents are ſo perceptible on the banks of rivers, that the watermen frequently take the advantage of them, to make their way in the direction oppoſite to the general courſe. They are ſtill more decid-

edly remarkable on the banks of lakes. Father *Charlevoix*, who has given us many judicious obſervations reſpecting Canada, informs us, that when he embarked on Lake Michigan, he made out eight good leagues a day, by the aſſiſtance of theſe lateral counter currents, though the wind was contrary. He ſuppoſes, and with good reaſon, that the rivers, which throw themſelves into this lake, produce, in the middle of its waters, ſtrong contrary currents: "But theſe ſtrong currents," ſays he,* "are perceptible "only in the middle of the channel, and produce on the "banks, *vortices*, or counter currents, of which thoſe a-"vail themſelves who have to coaſt along the ſhore, as is "the caſe with perſons who are obliged to take the wa-"ter in canoes made of bark."

Dampier's Work is filled with obſervations on the counter currents of the Ocean, which are very common, eſpecially in the ſtraits of iſlands ſituated between the Tropics. He ſpeaks frequently of the extraordinary effects produced by the meeting of the particular currents which occaſions them; but as he does not conſider the Tides themſelves, as *vortices* of the general Current of the Atlantic Ocean; and as I believe he did not ſo much as ſuſpect the exiſtence of its general Current, though he has thoroughly inveſtigated the two Currents, or Monſoons, of the Indian Ocean, I ſhall proceed to adduce certain facts, which eſtabliſh the moſt perfect conformity between the Atlantic Current and thoſe which he himſelf obſerved in the Indian Ocean, and in the South Sea.

Theſe facts will farther prove, to a demonſtration, the exiſtence of theſe polar effuſions: For, univerſally, wherever theſe effuſions happen to meet, in their progreſs ſouthward, their own counter currents which are ſetting in toward the North, they produce, by their colliſion,

* *Charlevoix*, Hiſtory of New France, Vol. vi. page 2.

Tides the moſt tremendous, and whoſe direction is diametrically oppoſite.

Let us conſider them only at their point of departure to the North of Europe, where they begin to leave our coaſts, and to ſtretch out into the open Sea. *Pont Oppidan* ſays, in his Hiſtory of Norway, that there is above Berghen a place called *Maleſtrom*, very formidable to mariners, where the Sea forms a prodigious *vortex* of ſeveral miles diameter, in which a great many veſſels have been ſwallowed up. *James Beverell** ſays poſitively, that there are in the Orkney iſlands two oppoſite Tides, the one running from the North Weſt, and the other from the South Eaſt; that they daſh their roaring billows up to the clouds, and convert the ſeparating ſtrait into an enormous maſs of foam. The Orkneys lie a little under the Latitude of Berghen, and in the prolongation of the northern coaſt of Norway, that is, at the confluence of the polar effuſions and of their counter currents.

Other iſlands of the Sea are in ſimilar poſitions, as we could prove, did room permit. The channel of Bahama, for example, which runs with ſo much rapidity to the North, between the Continent of America and the Lucayo iſlands, produces, round thoſe iſlands, by its encountering the general Current of that Sea, Tides the moſt tumultuous, and ſimilar to thoſe of the Orkneys.

Theſe counter currents to the courſe of the Atlantic Ocean produce, then, our European and American Tides, which ſet in to the North on the coaſt, while its general Current runs ſouthward, at leaſt in the Summer time. I could adduce a thouſand other obſervations reſpecting the exiſtence of theſe contrary Currents; but a ſingle one, more general than thoſe which I have quoted, will be ſufficient for my purpoſe, both from its importance and its

* See *James Beverell*, Beauties of Scotland, Vol. vii. page 1405.

authenticity, being the firſt of all thoſe which have been made in Europe, and perhaps the only one; it is that of *Chriſtopher Columbus*, ſetting out on the diſcovery of the New World.

He ſet ſail from the Canaries about the beginning of September, and ſteered to the Weſt. He found, during the firſt days of his voyage, that the currents carried him to the North Eaſt. When he had advanced two or three hundred leagues from land, he perceived that their direction was ſouthward. This greatly terrified his companions, who believed that the Sea was there driving to a precipice. Finally, as he approached the Lucayo Iſlands, he again found the currents ſetting in northward. The journal of this important voyage may be found in *Herrera*.

My opinion is, that this general Current, which flows from our Pole, in Summer, with ſo much rapidity, and which is ſo violent toward its ſource, according to the experience of *Ellis* and *Linſchotten*, croſſes the equinoctial Line, in as much as its flux is not ſtemmed by the effuſions of the South Pole, which, at that ſeaſon are conſolidated into ice. I preſume, for the ſame reaſon, that it extends beyond the Cape of Good Hope, from whence it is directed toward the torrid Zone, to which it is attracted by the diminution of the waters, which the Sun is there inceſſantly pumping up; and that being directed caſtward by the poſition of Africa and of Aſia, it forces the Indian Ocean into the ſame direction, contrary to its uſual motion. I conſider it, therefore, as the prime mover of the weſterly Monſoon, which takes place in the Seas of India, in the month of April, and ends not till the month of September.

I am likewiſe of opinion, that the general Current which iſſues, during our Winter, from the South Pole, at that time heated by the rays of the Sun, reſtores the In-

dian Ocean to its natural motion weſtward, which is beſides determined, on this ſide, by the general impulſions of the eaſterly winds, which uſually blow in the torrid Zone, when nothing deranges their courſe. I, farther, preſume, that this current, in its turn, penetrates into our Atlantic Ocean, directs its motion northward by the poſition of America, and produces various other changes in our Tides.

In fact, *Froger* ſays that, in Braſil, the Currents follow the Sun. They run ſouthward when he is in the South, and northward when he is to the North.* Thoſe who have had experience of theſe effuſions of the South Pole, beyond Cape Horn, have found, that, in the Summer of the Southern Hemiſphere, the Tides ſet in northward, as was obſerved by *William Schouten*, who, in January, 1661, diſcovered Maire's Strait. But ſuch, on the contrary, as have gone thither in the Winter of thoſe regions, have found that the Tides run ſouthward, and came from the North, as was obſerved by *Fraſer* in the month of May of the year 1712.

It now ſeems, to me, poſſible to explain the principal phenomena of our Tides, from theſe polar effuſions. It will be evident, for example, why thoſe of the evening ſhould be ſtronger, in Summer, than thoſe of the morning; becauſe the Sun acts more powerfully by day than by night, on the ices of the Pole, which are on the ſame Meridian with ourſelves. This effect reſembles the intermittance of certain fountains which are ſupplied from mountains of ice, and flow more abundantly in the evening than in the morning. It will farther be evident, how it happens that our morning Tides, in Winter riſe higher than thoſe of the evening; and why the order of our Tides changes, at the end of every ſix months, as *Bou-*

* Voyage to the South Sea.

ATLANTIC HEMISPHERE:

with its Channel, its Ices, its Currents, & its Tides, in the Months of January & February.

*guer** has well remarked, who thought the fact aſtoniſhing, but without aſſigning any reaſon for it; becauſe the Sun being alternately toward both Poles, the effects of the Tides muſt neceſſarily be oppoſite, like the cauſes which produce them.

But I beg leave to ſuggeſt harmonies, between the Ocean and the Poles, ſtill more extenſive and more ſtriking. At the Solſtices the Tides are lower than at any other ſeaſon of the year; and theſe, likewiſe, are the ſeaſons when there is moſt ice on the two Poles, and, conſequently, leaſt water in the Sea. The reaſon is obvious. The Winter Solſtice is, with reſpect to us, the ſeaſon of the greateſt cold; there is, accordingly, at that time, on our Pole, and on our Hemiſphere, the greateſt poſſible accumulation of ice. It is, indeed, at the South Pole, the Summer Solſtice; but there is little ice melted on this pole, becauſe the action of the greateſt heat is not felt there, as with us, but when the Earth has an acquired heat, ſuperadded to the actual heat of the Sun, which takes place only in the ſix weeks that follow the Summer Solſtice; and theſe give us, likewiſe, in our Summer, the hotteſt ſeaſon of the year, which we call the Dog Days.

At the Equinoxes, on the contrary, we have the higheſt Tides. And theſe are preciſely the ſeaſons when there is the leaſt ice at the two Poles, and, of courſe, the greateſt maſs of water in the Ocean. At our autumnal Equinox, in September, the greateſt part of the ices of the North Pole, which has undergone all the heats of Summer, is melted, and thoſe of the South Pole begin to diſſolve. It is farther remarkable, that the tides, at our vernal Equinox, in March, riſe higher than thoſe of September, becauſe it is the end of Summer to the South Pole, which contains much more ice than ours, and, conſequently, ſends to the

* *Bouguer*, Treatiſe of Navigation, page 153.

Ocean, a much greater mafs of water. And it contains more ice, becaufe the Sun is fix days lefs in that Hemifphere, than in ours. If I am afked, Why the Sun does not communicate his light and heat, in exactly equal proportions, to both Poles? I fhall leave it to the learned to affign the *caufe*, but fhall afcribe the *reafon* of it to the Divine Goodnefs, which has been pleafed to beftow the larger fhare of thefe bleffings, on that half of the Globe which contains the greateft quantity of dry land, and the greateft number of inhabitants.

I fhall fay nothing of the intermittance of thefe polar effufions, which produce, on our coafts, two fluxes and two refluxes, nearly in the fame time that the Sun, making the circuit of the Globe, over our Hemifphere, alternately heats two Continents and two Oceans, that is, in the fpace of twentyfour hours, during which his influence twice acts, and is twice fufpended. Neither fhall I fpeak of their retardation, which is nearly three quarters of an hour from one day to another, and which feems to be regulated by the different diameters of the polar cupola of ice, the extremities of which, melted by the Sun, diminifh and retire from us every day, and whofe effufions muft, confequently, require more time to reach the Line, and to return from the Line to us. Neither fhall I dwell on the other relations which thefe polar periods have to the phafes of the Moon, efpecially when fhe is at the full; for her rays poffefs an evaporating heat, as the late experiments, made at Rome and at Paris, have demonftrated: For this would lay me under the neceffity of detailing a feries of obfervations and facts, which might carry me too far.

Much lefs fhall I involve myfelf in a difcuffion of the Tides of the South Pole, which, in the Summer of that Pole, in the open Sea, come immediately from the South and South Weft, in vaft furges, conformably to the expe-

rience of the Dutch Navigator, *Abel Tafman*, in the months of January and February 1692; and of their irregularity on the coafts of that Hemifphere, fuch as thofe on the coafts of New Holland, where *Dampier*, in the month of January 1688, found, to his great aftonifhment, that the higheft Tide, which fet in from eaft quarter north, did not come till three days after full moon, and where his fhip's company, ftruck with conflernation, were, for feveral days together, under the apprehenfion that their veffel, which they had hauled up on the beach to be refitted, could never be got afloat again.* I fhall fay nothing of thofe of New Guinea, where, toward the end of April, the fame Navigator experienced feveral, on the contrary, in the fpace of a fingle night, which extended, in direct oppofition to ours, from North to South, and came from the Weft in very rapid fwells, tumultuous, and preceded by enormous furges, which did not break; nor of the inconfiderable elevation of thefe Tides on the coaft of Brafil, and in moft of the iflands of the South Sea, and of the Eaft Indies, where they rife only to 5, 6, 7, feet, whereas *Ellis* found them 25 feet high at the entrance of Hudfon's Bay, and the *Chevalier Narbrough*, 20 feet at the entrance of Magellan's Straits.

Their courfe toward the Equator in the South Sea, their retardations and accelerations on thefe fhores, their directions, fometimes eaftward, fometimes weftward, according to the Monfoons; finally, their rife, which increafes in proportion as we approach the Pole, and diminifhes in proportion to our diftance from it, even between the Tropics, demonftrates, that their focus is not under the Line. The caufe of their motions depends not on the attraction, or the preffure, of the Sun and of the Moon, on that part of the Ocean; for thefe forces would, un-

* *Dampier*'s Voyages: Treatife on Winds and Tides, pages 308 and 309.

doubtedly, act there with the greateſt energy, and in periods as regular as the courſe of theſe two luminaries; but it ſeems to depend entirely on the combined heat of theſe ſame luminaries, on the Poles of the Globe, the irregular effuſions of which, not being narrowed in the ſouthern Hemiſphere, as in ours, by the channel of two adjacent Continents, produce, on the ſhores of the Indian Ocean and the South Sea, expanſions vague and intermitting.

It is ſufficient, therefore, to admit theſe alternate effuſions of the polar ices, which it is impoſſible to call in queſtion, to explain, with the greateſt facility, all the phenomena of the Tides, and of the Currents of the Ocean. Theſe phenomena preſent, in the journals of Navigators the moſt enlightened, a perpetual obſcurity, and a multitude of contradictions, as often as theſe ſame Navigators perſiſt in aſcribing the cauſes of them to the conſtant preſſure of the Moon and of the Sun on the Equator, without paying attention to the alternate Currents from the Poles, which direct their courſe to that ſame Equator; to their counter currents, which returning toward the Poles, produce Tides; and to the revolutions which Winter and Summer effect on theſe two movements.

It has been ſuppoſed, indeed, in modern times, that the Sea muſt be clear of ice under the Poles, and this is founded on the groundleſs aſſertion, that the Sea freezes only along the ſhore; but this ſuppoſition is the creature of men in their cloſets, in contradiction to the experience of the moſt celebrated Navigators. The efforts of Captain *Cook*, toward the South Pole, demonſtrate its erroneouſneſs. That intrepid mariner, in the month of February, the Dog Days of the Southern Hemiſphere, never could approach nearer to that Pole, where there is no land, than the 70th degree of Latitude, that is, no nearer than five hundred leagues, though he had coaſted round

its cupola of ice for a whole Summer; beſides this diſtance did not compoſe half the magnitude of the cupola, for he was permitted to advance ſo far only under favour of a bay, opened in a part of its circumference, which every where elſe was of much greater extent.

Theſe bays, or openings, are formed in the ice, merely by the influence of the neareſt adjacent lands, where Nature has diſtributed ſandy zones, to aſſiſt in accelerating the fuſion of the polar ices, at the proper ſeaſon. Such are, to throw it out only on our way, for time permits me not here to unfold all the plans of this wonderful Architecture; ſuch, I ſay, are thoſe long belts of ſand which encompaſs South America, in Magellan's Land; and thoſe of Tartary, which commence in Africa, at Zara, or the Deſert, and proceed forward till they terminate in the north of Aſia. The winds, in Summer, convey the igneous particles, with which thoſe Zones are filled, toward the Poles, where they accelerate the action of the Sun upon the ices.

It is eaſy to conceive, independent of experience, that the ſands multiply the heat of the Sun, by the reflections of their ſpecular and brilliant parts, and preſerve it a long time in their interſtices. It is certain, at leaſt, that the greateſt openings in the polar ices are always to be found in the direction of the warm winds, and under the influence of theſe ſandy tracks of land, as I could eaſily demonſtrate, were this the proper place. But we may ſee examples of it, without quitting our own Continent, nay, in our very gardens. In Ruſſia, the rivers and lakes always begin to thaw at the banks, and the fuſion of their ices is accelerated, in proportion as the ſtrand is more or leſs gravelly, and as they meet, relatively to the ſtrand, in the direction of the South wind.

We obſerve the ſame effects in our own gardens, toward the cloſe of Winter. The ice which covers the

gravel on the alleys, melts firſt; afterward that which is on the earth, and laſt of all, that which is in the baſons. The fuſion of this, too, begins at the brink, and the length of time neceſſary to complete it, is in proportion to the extent of the baſon; ſo that the central part, or that which is fartheſt from the earth, is likewiſe, the laſt that diſſolves.

There can remain, therefore, not the ſlighteſt ſhadow of doubt, that the Poles are covered with a cupola of ice, conformably to the experience of Navigators, and the dictates of natural reaſon. We have taken a glance of the icy dome of our own Pole, which covers it, in Winter, to an extent of more than two thouſand leagues over the Continents. It is not ſo eaſy to determine its elevation at the centre, and under the very Pole; but the height muſt be immenſe.

Aſtronomy ſometimes preſents, in the Heavens, an image of it ſo conſiderable, that the rotundity of the Earth ſeems to be remarkably affected by it.

I take the liberty of quoting, what I find, on this ſubject, in an Engliſh Author of note, *Childrey*.* This Naturaliſt ſuppoſes, as I do, that the Earth, at the Poles, is covered with ice, to ſuch a height, that its figure is thereby rendered ſenſibly oval. This he proves by two very curious aſtronomical obſervations. "What obliges me, "beſides," ſays he, "to embrace this paradox, is, that it "ſerves to reſolve admirably well, a difficulty of no ſmall "importance, which has greatly embarraſſed *Tycho Brhaë* "and *Kepler*, reſpecting central eclipſes of the Moon, "which take place near the Equator; as that was which "*Tycho* obſerved in the year 1588, and that obſerved by "*Kepler* in the year 1624: Of which he thus ſpeaks: "*Notandum eſt hanc Lunæ eclipſim (inſtar illius quam*

* Natural Hiſtory of England, pages 246 and 247.

" *Tycho, anno* 1588, *obſervavit totalem, & proximam cen-*
" *trali) egregiè calculum fefelliſſe; nam non ſolum mora*
" *totius Lunæ in tenebris brevis fuit, ſed et duratio reli-*
" *qua multò magis; perindè quaſi tellus elliptica eſſet, de-*
" *metientem breviorem habens ſub Æquatore, longiorem a*
" *polo uno ad alteram.* That is, *It is worthy of remark,*
" *that this eclipſe of the Moon,*" (he is ſpeaking of that
" of the 26th September, 1624) *like the one which* Tycho
" *obſerved, in the year* 1588, *which was total, and very*
" *nearly central, differed widely from the calculation; for*
" *not only was the duration of total darkneſs extremely*
" *ſhort, but the reſt of the duration, previous, and poſterior,*
" *to the total obſcuration, was ſtill ſhorter; as if the fig-*
" *ure of the Earth were elliptical, having the ſmaller di-*
" *ameter under the Equator, and the greater, from Pole*
" *to Pole.*

The detached maſſes, half melted, which are every year torn from the circumference of this cupola, and which are met with, floating at ſea, prodigiouſly diſtant from the Pole, about the 55th degree of Latitude, are of ſuch an elevation, that *Ellis*, *Cook*, *Martens*, and other Navigators of the North, and of the South, the moſt accurate in their details, repreſent them as, at leaſt, as lofty as a ſhip under ſail: Nay, *Ellis*, as has already been mentioned, does not heſitate to aſſign to them an elevation of from 1500 to 1800 feet. They are unanimous in affirming, that theſe vaſt fragments emit coruſcations, which render them perceptible before they come to the Horizon. I ſhall remark by the way, that the *Aurora Borealis*, or Northern Light, may, very probably, owe its origin to ſimilar reflections from the polar ices, the elevation of which may, perhaps, one day be determined by the extent of theſe very lights.

Whatever may be in this, *Denis*, Governor of Canada, ſpeaking of the ices which deſcend, every Summer, from

the North, upon the great bank of Newfoundland, fays, that they are higher than the turrets of Notre Dame, and that they may be feen at the diftance of from 15 to 18 leagues. Their cold is felt on fhip board at a fimilar diftance. " They are," according to his account,* " fome-" times in fuch numbers, being all carried forward by " the fame wind, that there have been veffels, making " toward the land to fifh, which fell in with fome of them, " in a feries of a hundred and fifty leagues in length, and " upward; which coafted along them for a day or two, " the night included, with a freth breeze, and every fail " fet, without being able to reach the extremity. In " this manner they keep on under way, looking for an " opening through which the veffel may pafs; if they " find one, they crofs it, as through a ftrait; otherwife, " they muft get on, till they have outfailed the whole " chain, in order to make good their paffage; for the " way is throughout blocked up with ice. Thefe ices " do not melt, till they meet the warm water toward the " South, or are forced by the wind on the land fide. " Some of them run aground in from 25 to 30 fathoms " of water; judge of their height, exclufive of what is " above water. The fifhermen have affured me, that " they faw one aground, on the great bank, in 45 fathom " water, and which was, at leaft, ten leagues round. It " muft have been of a great height. Ships do not come " near thefe ices, for there is danger leff they fhould over-" turn, according as they diffolve on the fide expofed to " the greateft heat."

It is to be obferved, that the ices in queftion are already more than half melted by the time they reach the banks of Newfoundland; for, in fact, they fcarcely go any farther. It is the Summer's heat which detaches them from

* Natural Hiftory of North America, Vol. ii. chap. 1, pages 44 and 45.

the North, and they are enabled to make even ſuch a progreſs ſouthward, only by means of their floating down the current, which carries them toward the Line, where they arrive, in a ſtate of diſſolution, to replace the waters which the Sun is continually evaporating in the torrid Zone.

Theſe polar ices, of which our mariners ſee only the borders and the crumbs, muſt have, at their centre, an elevation proportioned to their extent. For my own part, I conſider the two Hemiſpheres of the Earth as two mountains with their baſes applied to each other at the Line, the Poles as the icy ſummits of theſe mountains, and the Seas as rivers flowing from theſe ſummits.

If, then, we repreſent to ourſelves the proportions which the glaciers of Switzerland have to their mountains, and to the rivers which flow from them, we ſhall be able to form ſome faint idea of thoſe proportions which the glaciers of the Poles bear to the whole Globe and to the Ocean. The Cordeliers of Peru, which are only mole-hills, compared to the two Hemiſpheres, and the rivers, which iſſue from them, only rills of water compared to the Sea, have ſelvages of ice, from twenty to thirty leagues broad, briſtled, at their centre, with pyramids of ſnow from twelve to fifteen hundred fathoms high. What, then, muſt be the elevation of theſe two domes of polar ice, which have in Winter, baſes of two thouſand leagues in diameter? I can have no doubt, that their thickneſs, at the Poles, muſt have repreſented the Earth as oval, in central eclipſes of the Moon, conformably to the obſervations of *Kepler* and *Tycho Brhaë*.

I deduce another conſequence from this configuration. If the elevation of the polar ices is capable of changing in the Heavens the apparent form of the Globe, their weight muſt be ſufficiently conſiderable to produce ſome influence on its motion in the Ecliptic. There is, in fact,

a very ſingular correſpondence between the movement, by which the Earth alternately preſents its two Poles to the Sun, in one year, and the alternate effuſions of the polar ices, which take place in the courſe of the ſame year. Let me explain my conception of the way in which this motion of the Earth is the effect of theſe effuſions.

Admitting, with Aſtronomers, the laws of Attraction among the heavenly bodies, the Earth muſt certainly preſent to the Sun, which attracts it, the weightieſt part of its Globe. Now, this weightieſt part muſt be one of its Poles, when it is ſurcharged with a cupola of ice, of an extent of two thouſand leagues, and of an elevation ſuperior to that of the Continents. But as the ice of this Pole, which its gravity inclines toward the Sun, melts in proportion to its vertical approximation to the ſource of heat, and as, on the contrary, the ice of the oppoſite pole increaſes in proportion to its removal, the neceſſary conſequence muſt be, that the firſt Pole becoming lighter, and the ſecond heavier, the centre of gravity paſſes alternately from the one to the other, and from this reciprocal preponderancy muſt enſue that motion of the Globe in the Ecliptic, which produces our Summer and Winter.

From this alternate preponderancy, it muſt likewiſe happen, that our Hemiſphere, containing more land than the ſouthern Hemiſphere, and being, conſequently, heavier, it muſt incline toward the Sun for a greater length of time; and this, too, correſponds to the matter of fact, for our Summer is five or ſix days longer than our Winter. A farther conſequence is, that our Pole cannot loſe its centre of gravity, till the oppoſite Pole becomes loaded with a weight of ice ſuperior to the gravity of our Continent, and of the ices of our Hemiſphere; and this, likewiſe, is agreeable to fact, for the ices of the South Pole are more elevated, and more extenſive than thoſe

of the northern ; for mariners have not been able to penetrate farther than to the 70th degree of South Latitude, whereas they have advanced no leſs than 82° North.

Here we have a glimpſe of the reaſons by which Nature was determined to divide this Globe into two Hemiſpheres, of which the one ſhould contain the greateſt quantity of dry land, and the other the greateſt quantity of water ; to the end that this movement of the Globe ſhould poſſeſs, at once, conſiſtency and verſatility. It is farther evident, why the South Pole is placed immediately in the midſt of the Seas, far from the vicinity of any land ; that it might be able to load itſelf with a greater maſs of marine evaporations, and that theſe evaporations accumulated into ice around it, might balance the weight of the Continents with which our Hemiſphere is ſurcharged.

And here I lay my account with being oppoſed by a very formidable objection. It is this. If the polar effuſions occaſion the Earth's motion in the Ecliptic, the moment would come in which, its two Poles being in equilibrio, it could preſent to the Sun the Equator only.

I acknowledge that I have no reply to make to that difficulty, unleſs this be one; We muſt have recourſe to an immediate will of the AUTHOR of Nature, who is pleaſed to deſtroy the inſtant of this equilibrium, and who reeſtabliſhes the balancing of the Earth on its Poles, by laws with which we are unacquainted. Now, this conceſſion no more weakens the probability of the hydraulic cauſe, which I apply to it, than that of the principle of the attraction of the heavenly bodies, which attempts to explain it, I am bold to ſay, with much leſs clearneſs. This very attraction would ſoon deprive the Earth of all manner of motion, if it alone acted in the ſtars. If we would be ſincere, it is in the acknowledgment of an intelligence, ſuperior to our own, that all the mechanical

cauſes, of our moſt ingenious ſyſtems, muſt iſſue. The will of GOD is the *ultimatum* of all human knowledge.

From this objection, however, I ſhall deduce conſequences, which will diffuſe new light on the ancient effects of polar effuſions, and on the manner in which they might have produced the Deluge.*

On the ſuppoſition, then, of the reeſtabliſhment of the equilibrium between the Poles, and of the Earth's conſtantly preſenting its Equator to the Sun, it is extremely probable, that, in this caſe, it would be ſet on fire. In fact, on this hypotheſis, the waters which are under the Equator, being evaporated by the unremitting action of the

* The Prieſts of Egypt maintain, according to Herodotus, that the Sun had ſeveral times deviated from his courſe; accordingly our hypotheſis has nothing new in it. They had, perhaps, deduced the ſame conſequences from this, that we have done. One thing is certain; they believed that the Earth would, one day, periſh by a general conflagration, as it had been overwhelmed by an univerſal deluge. Nay, I believe it was one of their Kings, who, as a ſecurity againſt either one or the other of theſe calamities, had two pyramids built, the one of brick, a preſervative againſt fire; the other of ſtone, a preſervative againſt an inundation. The opinion of a future conflagration of Nature is diffuſed over many nations. But effects ſo terrible, which would ſpeedly reſult from the mechanical cauſes, by which Man endeavours to explain the laws of Nature, can take place only by an immediate order of the DEITY. He preſerves his works conformably to the ſame Wiſdom with which they were created. Aſtronomers have, for many Ages, been obſerving the annual motion of the Earth in the Ecliptic, and never have they ſeen the Sun ſo much as a ſingle ſecond ſhort of, or beyond, the Tropics. GOD governs the World by variable powers, and deduces from theſe, harmonies which are invariable. The Sun neither moves in the circle of the Equator, which would ſet the Earth on fire, nor in that of the Meridian, which would produce an inundation of water; but his courſe is traced in the Ecliptic, deſcribing a ſpiral line between the two Poles of the World. In this harmonious courſe, he diſpenſes cold and heat, dryneſs and humidity, and derives from theſe powers, each of them deſtructive by itſelf, Latitudes ſo varied, and ſo temperate, all over the Globe, that an infinite number of creatures, of an extreme delicacy, find in them, every degree of temperature adapted to the nature of their frail exiſtence.

Sun, would become irrevocably fixed in ice at the Poles, where they would receive, without effect, the influence of that luminary, which would be to them conſtantly in the Horizon. The Continents being thus dried up, under the torrid Zone, and inflamed by a heat every day increaſing, would quickly catch fire. Now, if it be probable that the Earth would periſh by fire, were the Sun's motion confined to the Equator, it is no leſs probable, that it muſt be deluged with water, if the courſe of the Sun were in the direction of the Meridian. Oppoſite means produce contrary effects.

We have juſt ſeen, that the alternate effuſions of part of the polar ices merely, are ſufficient for renewing all the waters of the Ocean, for producing all the phenomena of the Tides, and for effecting the balancing of the Earth in the Ecliptic. We believe them capable of entirely inundating the Globe, were the fuſion to take place all at once. Let it but be remarked, that the effuſion of only a part of the ices of the Cordeliers, in Peru, is ſufficient to produce an annual overflow of the Amazon, of the Oroonoko, and of ſeveral other great rivers of the New World, and to inundate a great part of Braſil, of Guiana, and of the *Terra Firma* of America; that the melting of part of the ſnows on the mountains of the Moon in Africa, occaſions every year the inundations of Senegal, contributes to thoſe of the Nile, and overflows vaſt tracks of country in Guinea, and the whole of Lower Egypt; and that ſimilar effects are annually reproduced in a conſiderable part of ſouthern Aſia, in the kingdoms of Bengal, of Siam, of Pegou, and of Cochin China, and in the diſtricts watered by the Tigris, the Euphrates, and many other rivers of Aſia, which have their ſources in chains of mountains perpetually covered with ice, namely, Taurus and Imaüs. Who, then, can entertain a doubt, that the total fuſion of the ices of both Poles, would be

ſufficient to ſwell the Ocean above every barrier, and completely to inundate the two Continents ?

The elevation of theſe two cupolas of polar ice, vaſt as Oceans, muſt it not far ſurpaſs the height of the higheſt land, when the ſimple fragments of their extremities, after they are half diſſolved, are as high as the turrets of Notre Dame ; nay, riſe to the height of from fifteen to eighteen hundred feet above the Sea ? The ground on which Paris ſtands, at forty leagues diſtance from the ſhore of the Sea, is only twentytwo fathom above the level of neap tides, and no more than eighteen above the higheſt ſpring tides. A great part of both the Old and New World is of an elevation much inferior even to this.

For my own part, if I may venture to declare my opinion, I aſcribe the general Deluge to a total effuſion of the polar ices, to which may be added that of the icy mountains, ſuch as the ices of the Cordeliers and of Mount Taurus, the chains of which extend from twelve to fifteen hundred leagues in length, with a breadth of twenty or thirty leagues, and an elevation of from twelve to fifteen hundred fathom. To theſe may be ſtill farther added the waters diffuſed over the Atmoſphere, in clouds, and imperceptible vapours, which would not fail to form a very conſiderable maſs of water, were they collected on the Earth.

My ſuppoſition then is, that, at the epocha of this tremendous cataſtrophe, the Sun, deviating from the Ecliptic, advanced from South to North,* and purſued the di-

* I find an hiſtorical teſtimony in ſupport of this hypotheſis, in the Hiſtory of China by Father *Martini*, Book I. " During the reign of *Yaüs*, the " ſeventh Emperor, the Annals of the Country relate, that for ſix days to- " gether the Sun never ſet, ſo that a general conflagration was apprehend- " ed." The reſult, on the contrary, was a deluge which inundated the whole of China. The epoch of this Chineſe deluge, and that of the Univerſal Deluge, are in the ſame century. *Yaüs* was born 2307 years before CHRIST, and the Univerſal Deluge happened 2348 years before the ſame

rection of one of the Meridians which paſſes through the middle of the Atlantic Ocean and of the South Sea. In this courſe he heated only a Zone of water, frozen as well as fluid, which, through the greateſt part of the circumference has a breadth of four thouſand five hundred leagues. He extracted long belts of land and ſea fogs, which accompany the melting of all ices, of the chain of the Cordeliers, of the different branches of the icy mountains of Mexico, of Taurus, and of Imaüs, which like them run South and North; of the ſides of Atlas, of the ſummits of Teneriff, of Mount Jura, of Ida, of Lebanon, and of all the mountains covered with ſnow, which lay expoſed to his direct influence.

He quickly ſet on fire, with his vertical flame, the Conſtellation of the Bear, and that of the Croſs of the South; and, preſently, the vaſt cupolas of ice, on both Poles, ſmoked on every ſide. All theſe vapours, united to thoſe which aroſe out of the Ocean, covered the Earth with an univerſal rain. The action of the Sun's heat was farther augmented by that of the burning winds of the ſandy Zones of Africa and Aſia, which blowing, as all winds do, toward the parts of the Earth where the air is moſt rarefied, precipitated themſelves, like battering rams of fire, toward the Poles of the World, where the Sun was then acting with all his energy.

Innumerable torrents immediately burſt from the North Pole, which was then the moſt loaded with ice, as the Deluge commenced on the 17th of February, that ſeaſon of the year, when Winter has exerted its full power over our Hemiſphere. Theſe torrents iſſued all at once from every flood gate of the North; from the ſtraits of the Sea of Anadir, from the deep gulf of Kamſchatka, from the

epoch, according to the Hebrew computation. The Egyptians likewiſe had traditions reſpecting theſe ancient alterations of the Sun's courſe.

Baltic Sea, from the ſtrait of Waigat's, from the unknown ſluices of Spitbergen and Greenland, from Hudſon's Bay, and from that of Baffin, which is ſtill more remote. Their roaring currents ruſhed furiouſly down, partly through the channel of the Atlantic Ocean, hurled it up from the abyſſes of its profound baſon, drove impetuouſly beyond the Line, and their collateral counter tides forced back upon them, and increaſed by the Currents from the South Pole, which had been ſet a flowing at the ſame time, poured upon our coaſts the moſt formidable of Tides. They rolled along, in their ſurges, a part of the ſpoils of the Ocean, ſituated between the ancient and the new Continent. They ſpread the vaſt beds of ſhells which pave the bottom of the Seas at the Antilles and Cape Verd Iſlands, over the plains of Normandy; and carried even thoſe which adhere to the rocks of Magellan's Strait, as far as to the plains which are watered by the Saône. Encountered by the general Current of the Pole, they formed at their confluences horrible counter tides, which conglomerated, in their vaſt funnels, ſands, flints and marine bodies, into maſſes of indigeſted granite, into irregular hills, into pyramidical rocks, whoſe protuberances variegate the ſoil in many places of France and Germany. Theſe two general Currents of the Poles happening to meet between the Tropics, tore up, from the bed of the Seas, huge banks of madrépores, and toſſed them, unſeparated, on the ſhores of the adjacent iſlands, where they ſubſiſt to this day.*

* I have ſeen in the Iſle of France, ſome of theſe great beds of madrepores, of the height of ſeven or eight feet, reſembling ramparts, left quite dry, more than three hundred paces from the ſhore. The Ocean has left, on every land, ſome traces of its ancient excurſions. There have been found, on the ſteep ſtrand of the diſtrict of Caux, ſome of the ſhells peculiar to the Antilles Iſlands, particularly a very large one, called the *Thuilee*; in the vineyards of Lyons, that which they call the cock and hen, which is caught

In other places, their waters, ſlackened at the extremity of their courſe, ſpread themſelves over the ſurface of the ground in vaſt ſheets, and depoſited, by repeated undulations, in horizontal layers, the wreck and the viſcidities of an infinite number of fiſhes, ſea urchins, ſea weeds, ſhells, corals, and formed them into ſtrata of gravel, paſtes of marble, of marle, of plaſter and calcareous ſtones, which conſtitute, to this day, the ſoil of a conſiderable part of Europe. Every layer of our foſſils was the effect of an univerſal Tide. While the effuſions of the polar ices were covering the weſterly extremities of our Continent with the ſpoils of the Ocean, they were ſpreading over its eaſterly extremities thoſe of the Land, and depoſited on the ſoil of China, ſtrata of vegetable earth, from three to four hundred feet deep.

alive in no Sea whatever but the Straits of Magellan: The teeth and jaws of ſharks, in the ſands of Eſtampes. Our quarries are filled with the ſpoils of the Southern Ocean. On the other hand, if we may believe the Memoirs of Father *Le Comte*, the Jeſuit, there are in China ſtrata of vegetable earth from three to four hundred feet deep. This Miſſionary aſcribes to theſe, and with good reaſon, the extreme fertility of that country. Our beſt ſoils in Europe are not above three or four feet deep. If we had Geographical Charts which ſhould repreſent the different layers of our foſſil ſhells, we might diſtinguiſh in them the directions and the focuſes of the ancient currents which lodged them. I ſhall purſue this idea no farther; but here is another, which may preſent new objects of curioſity to the learned, who put greater value on the monuments raiſed by Man, than on thoſe of Nature. It is this, As we find in the foſſils of theſe weſtern regions, a multitude of the monuments of the Sea, we might, perhaps, be able to trace thoſe of our ancient Continent, in thoſe ſtrata of vegetable earth, of three and four hundred feet depth, in the countries of the Eaſt. Firſt, it is certain, from the teſtimony of the Miſſionary above quoted, that pit coal is ſo common in China, that moſt of the Chineſe make uſe of no other fuel. Now, it is well known that pit coal owes its origin to the foreſts which have been buried in the bowels of the Earth. It might be poſſible, therefore, to find amidſt theſe wrecks of the vegetable creation, thoſe of terreſtrial animals, of men, and of the firſt arts of the World, ſuch, at leaſt, as poſſeſſed ſome degree of ſolidity.

Then it was that all the plans of Nature were reverſed. Complete iſlands of floating ice, loaded with white bears, run aground among the palm trees of the torrid Zone, and the elephants of Africa were toſſed amidſt the fir groves of Siberia, where their large bones are ſtill found to this day. The vaſt plains of the Land, inundated by the waters, no longer preſented a career to the nimble courſer, and thoſe of the Sea, roufed into fury, ceaſed to be navigable. In vain did Man think of flying for ſafety to the lofty mountains. Thouſands of torrents ruſhed down their ſides, and mingled the confuſed noiſe of their waters with the howling of the winds, and the roaring of the thunder. Black tempeſts gathered round their ſummits, and diffuſed a night of horror in the very midſt of day. In vain did he turn an eager eye toward that quarter of the Heavens where Aurora was to have appeared: He perceives nothing in the whole circuit of the Horizon but piles of dark clouds heaped upon each other; a pale glare here and there furrows their gloomy and endleſs battalions; and the Orb of Day, veiled by their lurid coruſcations, emits ſcarcely light ſufficient to afford a glimpſe, in the firmament, of his bloody diſk, wading through new Conſtellations.

To the diſorder reigning in the Heavens, Man, in deſpair, yields up the ſafety of the Earth. Unable to find in himſelf the laſt conſolation of Virtue, that of periſhing free from the remorſe of a guilty conſcience, he ſeeks, at leaſt, to conclude his laſt moments in the boſom of Love, or of Friendſhip. But in that age of criminality, when all the ſentiments of Nature were ſtifled, friend repelled friend, the mother her child, the huſband the wife of his boſom. Every thing was ſwallowed up of the waters: Cities, palaces, majeſtic pyramids, triumphal arches, embelliſhed with the trophies of Kings: And ye, alſo, which ought to have ſurvived the ruin even of a World, ye

peaceful grottos, tranquil bowers, humble cottages, the retreats of innocence! There remained on the Earth no trace of the glory and felicity of the Human Race, in thoſe days of vengeance, when Nature involved in one ruin all the monuments of her greatneſs.

Such convulſions, of which traces without number ſtill remain, on the ſurface, and in the bowels of the Earth, could not poſſibly have been produced ſimply by the action of an univerſal rain.

I am aware that the letter of Scripture is expreſs in reſpect to this; but the circumſtances which the Sacred Hiſtorian combines, ſeem to admit the means which, on my hypotheſis, effected that tremendous revolution.

In the book of Geneſis it is ſaid, that it rained, over the whole Earth, for forty days and forty nights. That rain, as we have alleged, was the reſult of the vapours produced by the melting of the ices, both of the Land and of the Sea, and by the Zone of Water which the Sun paſſed over in the direction of the Meridian. As to the period of forty days, that quantity of time appears to me abundantly ſufficient to the vertical action of the Sun on the polar ices, to reduce them to the level of the Seas, as ſcarcely more than three weeks are neceſſary, of the proximity of the Sun to the Tropic of Cancer, to melt a conſiderable part of thoſe on our Pole. Nay, at that ſeaſon, nothing more ſeems to be wanting but a few puffs of ſoutherly, or ſouth weſt wind, for a few days to diſengage from the ice the ſouthern coaſt of Nova Zembla and to clear the ſtrait of Waigat's, as has been obſerved by *Martens*, *Barents*, and other Navigators of the North.

It is farther ſaid, in the Book of Geneſis, "All the "*fountains of the great Deep* were broken up, and the *windows of Heaven* were opened." The expreſſion, *the fountains of the great Deep*, can, in my opinion, be applied only to an effuſion of the polar ices, which are the real ſources of the Sea, as the effuſions of the ice on mountains are the ſources of all the great rivers. The expreſ-

ſion, *the windows*, or cataracts, *of Heaven*, denotes likewiſe, if I am not miſtaken, the univerſal reſolution of the waters diffuſed over the Atmoſphere, which are there ſupported by the cold, the focuſes of which were then deſtroyed at the Poles.

It is afterwards ſaid, in Geneſis, that after it had rained for forty days, GOD *made a wind to blow*, which cauſed the waters that covered the Earth to diſappear. This wind, undoubtedly, brought back to the Poles the evaporations of the Ocean, which fixed themſelves anew in ice. The Moſaic account, finally, adds circumſtances which ſeem to refer all the effects of this wind to the Poles of the World, for it is ſaid, Gen. viii. 2, 3, "The "fountains alſo of the Deep, and the windows of Heav-"en, were ſtopped, and the rain from Heaven was re-"ſtrained; and the *waters returned from off the Earth* "*continually*, and after *the end of the hundred and fifty* "*days* the waters were abated."

The agitation of theſe waters from ſide to ſide continually, perfectly agrees to the motion of the Seas, from the Line to the Poles, which muſt then have been performed without any obſtacle, the Globe being, on that occaſion, entirely aquatic; and it being poſſible to ſuppoſe that its annual balancing in the Ecliptic, of which the polar ices are at once the moving powers and the counterpoiſe, had degenerated, at that time, into a diurnal titubation, a conſequence of its firſt motion. Theſe waters retired, then, from the Ocean, when they came to be converted anew into ice upon the Poles; and it is worthy of remark, that the ſpace of a hundred and fifty days, which they took to fix themſelves in their former ſtation, is preciſely the time which each of the Poles annually employs, to load itſelf with its periodical congelations.

We find, beſides, in the ſequel of this hiſtorical account of the Deluge, expreſſions analagous to the ſame cauſes: "GOD ſaid again to Noah, while the Earth re-"maineth, ſeed time and harveſt, and cold and heat, and

"Summer and Winter, and day and night, ſhall not "ceaſe.*"

There muſt be nothing ſuperfluous in the *Words* of the AUTHOR of Nature, as there is nothing of this deſcription in his *Works*. The Deluge, as has been already mentioned, commenced on the ſeventeenth day of the ſecond month of the year, which was among the Hebrews, as with us, the month of February. Man had by this time caſt the ſeed into the ground, but reaped not the harveſt. That year, cold ſucceeded not to the heat, nor Summer to Winter, becauſe there was neither Winter nor cold, from the general fuſion of the polar ices, which are their natural focuſes; and the night, properly ſo called, did not follow the day, becauſe then there was no night at the Poles, where there is alternately one of ſix months, becauſe the Sun, purſuing the direction of a Meridian, illuminated the whole Earth, as is the caſe now, when he is in the Equator.

To the authority of Geneſis, I ſhall ſubjoin a very curious paſſage from the Book of Job,† which deſcribes the Deluge, and the Poles of the World, with the principal characters of them which I have juſt been exhibiting.

4. Ubi eras quando ponebam fundamenta Terræ ? Indica Mihi, ſi habes intelligentiam.

5. Quis poſuit menſuras ejus, ſi nôſti ? Vel quis tetendit ſuper eam, lineam ?

6. Super quo baſes illius ſolidatæ ſunt ? Aut quis demiſit lapidem angularem ejus,

7. Cum manè laudarent ſimul Aſtra matutina, & jubilarent omnes Filii DEI ?

8. Quis concluſit oſtiis ‡ Mare, quando erumpebat quaſi ex utero procedens :

* Gen. ch. viii. ver. 22. † Ch. xxxviii.

‡ Though the ſenſe which I affix to this paſſage, does not greatly differ from that of M. *de Saci*, in his excellent tranſlation of the Bible, there are, at the ſame time, ſeveral expreſſions, to which I aſſign a meaning rather oppoſite to that of this learned Gentleman.

9. Cum ponerem nubem veſtimentum ejus, & caligine, illud, quaſi pannis infantiæ, obvolverem ?

10. Circumdedi illud terminis meis, & poſui vectem & oſtia ?

11. Et dixi : Uſque huc venies, ſed non procedes amplius ; & hic confringes tumentes fluctus tuos.

12. Numquid poſt ortum tuum præcepiſti diliculo, & oſtendiſti Auroræ,* locum ſuum ?

13. Et tenuiſti concutiens extrema Terræ, & excuſſiſti impios ex ea ?

14. Reſtituetur ut lutum † ſignaculum, & ſtabit ſicut veſtimentum.

15. Auferetur ab impiis lux ſua, & brachium excelſum confringetur.

1ſt. *Oſtium*, properly ſpeaking, ſignifies an opening, a diſgorging, a ſluice, a flood gate, a mouth ; and not a barrier, according to *Saci*'s Tranſlation. Obſerve how admirably the ſenſe of this verſe, and of that which follows, is adapted to the ſtate of conſtraint and inactivity to which the Sea is reſtricted at the Poles, ſurrounded with clouds and darkneſs, like a child in ſwaddling clothes in his cradle. They are, likewiſe, expreſſive of the thick fogs which ſurround the baſis of the polar ices, as is well known to all the mariners of the North.

2dly. The preceeding epithets of *the foundations of the Earth ;* of the *faſtening of the foundations ;* of *ſtretching the line upon it ;* of the Sea's *breaking forth*, as if iſſuing from the womb, determine particularly the Poles of the World, from whence the ſeas flow over the reſt of the Globe. The epithet of *corner ſtone*, ſeems, likewiſe, to denote more particularly the North Pole, which, by its magnetic attraction, diſtinguiſhes itſelf from every other point of the Earth.

* *Auroræ locum ſuum*, the place of the Aurora. The *Aurora Borealis* is, perhaps, here intended. The cold of the Poles produces the Aurora, for there is ſcarce any ſuch thing between the Tropics. The Pole is, accordingly, properly ſpeaking, the natural place of the Aurora. In the verſe following, the expreſſion, *tenuiſti concutiens extrema Terræ*, evidently characterizes the total effuſions of the polar ices, ſituated at the extremities of the Earth, which occaſioned the Univerſal Deluge.

† *Reſtituetur ut lutum ſignaculum.* This verſe is very obſcure in the Tranſlation of M. *de Saci*. It appears to me here deſcriptive of the foſſil ſhells, which, over the whole Earth, are monuments of the Deluge.

16. Numquid ingreſſus es profunda Maris, & in noviſſimis Abyſſi * deambulâſti ?

17. Numquid apertæ ſunt tibi portæ Mortis,† & oſtia tenebroſa vidiſti ?

18. Numquid conſiderâſti latitudinem Terræ ?‡ Indica Mihi, ſi nôſti omnia.

19. In quâ viâ lux habitet, & tenebrarum quis locus ſit.

20. Ut ducas unumquodque ad terminos ſuos, & intelligas ſemitas domûs ejus.

21. Sciebas tunc quòd naſciturus eſſes ?, Et numerum dierum tuorum noveras ?

22. Numquid ingreſſus es theſauros nivis, aut theſauros grandinis aſpexiſti ?

23. Quæ preparavi in tempus hoſtis, in diem pugnæ & belli.

* *In noviſſimis Abyſſi, in the ſearch* (at the ſources) *of the Depth.* Saci tranſlates it, *in the extremities of the Abyſs.* This verſion deſtroys the correſpondence of the expreſſion under review, with that of the other polar characters, ſo clearly explained before; and the antitheſis of *noviſſima*, with that of *profunda Maris*, which goes before, by affixing the ſame meaning to it. Antitheſis is a figure in frequent uſe among the Orientals, and eſpecially in the Book of Job. *Noviſſima Abyſſi*, literally denote, the places which renovate the Abyſs, the ſources of the Sea, and, conſequently, the polar ices.

† *Porta Mortis, & oſtia tenebroſa ; the gates of Death, and the doors of the ſhadow of Death*, or, *the gates of Darkneſs.* The Poles, being uninhabitable, are, in reality, the gates of Death. The epithet *dark* here denotes the nights of ſix months duration, which hold their empire at the Poles. This ſenſe is farther confirmed by what is ſubjoined in the following verſes; the *locus tenebrarum*, place of darkneſs, and the *theſaurus nivis*, treaſures of the ſnow. The Poles are, at once, the place of darkneſs, and that of the Aurora.

‡ *Latitudinem Terræ.* Literally : *Haſt thou perceived the breadth* (the Latitude) *of the Earth ?* In truth, all the characters of the Pole could be known only to thoſe who had courſed over the Earth in its Latitude. There were, in the times of Job, many Arabian travellers who went eaſtward, and weſtward, and ſouthward, but very few who had travelled northward, that is to ſay, in Latitude.

Common Verſion of the Bible.

4. Where waſt thou, when I laid the foundations of the Earth? Declare, if thou haſt underſtanding.

5. Who hath laid the meaſures thereof, if thou knoweſt? Or who hath ſtretched the line upon it?

6. Whereupon are the foundations thereof faſtened? Or who laid the corner ſtone thereof?

7. When the morning ſtars ſang together, and all the Sons of GOD ſhouted for joy.

8. Or who ſhut up the Sea with doors, when it brake forth, as if it had iſſued out of the womb?

9. When I made the cloud the garment thereof, and thick darkneſs a ſwaddling band for it,

10. And brake up for it my decreed place, and ſet bars and doors,

11. And ſaid, Hitherto ſhalt thou come, but no farther: And here ſhall thy proud waves be ſtaid.

12. Haſt thou commanded the morning ſince thy days? and cauſed the dayſpring to know his place,

13. That it might take hold of the ends of the Earth, that the wicked might be ſhaken out of it?

Tranſlation of SAINT PIERRE'S *Verſion.*

4. Where waſt thou, when I laid the foundations of the Earth? Tell it Me, if thou haſt any knowledge.

5. Knoweſt thou who it is that determined its dimenſions, and who regulated its levels?

6. On what are its baſes ſecured; and who fixed its corner ſtone?

7. When the ſtars of the morning praiſed Me all together, and when all the Sons of GOD were tranſported with joy.

8. Who appointed gates to the Sea, to ſhut it up again, when it inundated the Earth, ruſhing as from its mother's womb;

9. When I gave it the clouds for a covering, and wrapped it up in darkneſs, as a child is wrapped up in ſwaddling clothes?

10. I ſhut it up within bounds well known to me: I appointed for it a bulwark and ſluices,

11. And ſaid to it, Thus far ſhalt thou come, but farther thou ſhalt not paſs, and here the pride of thy billows ſhall be broken.

12. Is it thou who, in opening thine eyes to the light, haſt given commandment to the dawning of the day to appear, and haſt ſhewn to Aurora the place where ſhe ought to ariſe?

13. Is it thou who, holding in thy hands the extremities of the Earth, haſt convulſed it, and ſhaken the wicked out of it?

14. It is turned as clay to the ſeal, and they ſtand as a garment.

15. And from the wicked their light is withholden, and the high arm ſhall be broken.

16. Haſt thou entered into the ſprings of the Sea? or, Haſt thou walked in the ſearch of the Depth?

17. Have the gates of Death been opened unto thee? or, Haſt thou ſeen the doors of the ſhadow of Death?

18. Haſt thou perceived the breadth of the Earth? Declare if thou knoweſt it all.

19. Where is the way where light dwelleth? and as for darkneſs, where is the place thereof?

20. That thou ſhouldeſt take it to the bound thereof, and that thou ſhouldeſt know the paths to the houſe thereof?

21. Knoweſt thou it, becauſe thou waſt then born? or, Becauſe the number of thy days is great?

22. Haſt thou entered into the treaſures of the ſnow? or, Haſt thou ſeen the treaſures of the hail,

23. Which I have reſerved againſt the time of trouble, againſt the day of battle and war?

14. A multitude of minute monuments of this event ſhall remain impreſſed in the clay, and ſhall ſubſiſt as the memorials of that devaſtation.

15. The light of the wicked ſhall be taken from them, and their lifted up arm ſhall be broken.

16. Haſt thou penetrated to the bottom of the Sea, and walked over the ſources which renovate the Abyſs?

17. Have theſe gates of Death been opened to thee; and haſt thou ſurveyed the dark diſgorgings of the Depth?

18. Haſt thou obſerved where the breadth of the Earth terminates? If thou knoweſt all theſe things, declare them unto Me.

19. Tell me where the light inhabits, and what is the place of darkneſs,

20. That thou mayeſt conduct each to its deſtination, ſeeing thou knoweſt their habitation, and the way that leads to it.

21. Didſt thou know, as theſe things already exiſted, that thou thyſelf wert to be born; and hadſt thou then diſcovered the fleeting number of thy days?

22, 23. Haſt thou, I ſay, entered into the treaſures of the ſnow, and ſurveyed thoſe tremendous reſervoirs of hail, which I have prepared againſt the time of the adverſary, and for the day of battle and war?

The Reader, I flatter myſelf, will not be diſpleaſed at my having deviated ſomewhat from my ſubject, that I might exhibit to him the agreement between my hypotheſis and the traditions of the Holy Scriptures; and eſpecially between it and thoſe, though not free from obſcurity, of a Book, perhaps, the moſt ancient that exiſts. Our moſt learned Theologians agree in thinking, that Job wrote prior to Moſes. Whether this be the caſe or not, ſurely no one ever painted Nature with greater ſublimity.

We may, farther, arrive at complete aſſurance of the general effect of the polar effuſions on the Ocean, from the particular effects of the icy effuſions of mountains, on the lakes and rivers of the Continent. I ſhall here relate ſome examples of theſe laſt; for the human mind, from its natural weakneſs, loves to particularize all the objects of its ſtudies. And this is the reaſon why it apprehends, much more quickly, the laws of Nature, in ſmall objects, than in thoſe which are great.

Addiſon, in his remarks on *Miſſon*'s Tour to Italy, page 322, ſays, that there is in the Lake of Geneva, in Summer, towards evening, a kind of flux and reflux, occaſioned by the melting of the ſnows, which fall into it in greater quantities after noon, than at other ſeaſons of the day. He explains, beſides, with much clearneſs, as he generally does, from the alternate effuſions of the ices on the mountains of Switzerland, the intermittance of certain fountains of that country, which flow only at particular hours of the day.

If this digreſſion were not already too long, I could demonſtrate, that there is no one fountain, nor lake, nor river, ſubject to a particular flux and reflux, but what is indebted for it to icy mountains, which ſupply their ſources. I ſhall ſubjoin but a very few words more reſpecting thoſe of the Euripus; the frequent and irregular movements of which ſo much embarraſſed the Philoſophers of Antiquity, and which may be ſo eaſily explain-

ed from the icy effuſions of the neighbouring mountains.

The Euripus, it is well known, is a ſtrait of the Archipelago, which ſeparates the ancient Beotia from the iſland of Eubea, now Negropont. About the middle of this ſtrait, where it is moſt narrow, the water is known to flow, ſometimes to the North, ſometimes to the South, ten, twelve, fourteen times a day, with the rapidity of a torrent. Theſe multiplied, and, very frequently, unequal movements, cannot poſſibly be referred to the tides of the Ocean, which are ſcarcely perceptible in the Mediterranean. A Jeſuit quoted by *Spon*,* endeavours to reconcile theſe to the phaſes of the Moon; but ſuppoſing the table of them, which he produces, to be accurate, their regularity and irregularity will always remain a difficulty of no eaſy ſolution. He refutes *Seneca*, the Tragic Poet, who aſcribes to the Euripus but ſeven fluxes, in the day time only:

Dùm laſſa Titan mergat Oceano juga.

Till Titan's tired ſteeds in th' Ocean plunge.

He adds farther, I know not after whom, that in the Sea of Perſia the flux never takes place but in the night time; and that under the Arctic Pole, on the contrary, it is perceptible twice in the day time, without being ever obſerved in the night. It is not ſo, ſays he, with the Euripus.

I ſhall obſerve, by the way, that his remark with reſpect to the Pole, ſuppoſing it true, evinces that its two diurnal fluxes are the effects of the Sun, who acts, only during the day, on the two icy extremities of the Continents of the New World, and of the Old. As to the Euripus, the variety, the number, and the rapidity of its fluxes, prove that they have their origin, in like manner, in icy mountains, ſituated at different diſtances, and under

* Voyage to Greece and the Levant, by *Spon*, vol. ii. page 340.

different aſpects of the Sun. For, according to that ſame Jeſuit, the iſland of Eubea, which is on one ſide of the ſtrait, contains mountains covered with ſnow for ſix months of the year; and we know equally well, that Beotia, which is on the other ſide, contains ſeveral mountains of an equal elevation, and even ſome which are crowned with ice all the year round, ſuch as Mount Oëta. If theſe fluxes and refluxes of the Euripus take place as frequently in Winter, which is not affirmed, the cauſe of them muſt be aſcribed to the rains which fall, at that ſeaſon of the year, on the ſummits of theſe lofty collateral mountains.

I ſhall enable the Reader to form an idea of theſe, not very apparent, cauſes of the movements of the Euripus, by here tranſcribing what *Spon* relates, in another place,* of the Lake of Livadia, or Copaïde, which is in its vicinity. This lake receives the firſt fluxes of the icy effuſions of the mountains of Beotia, and communicates them, undoubtedly, to the Euripus, through the mountain which ſeparates them. "It receives," ſays he, "ſeveral ſmall "rivers, the Cephiſus and others, which water that beau- "tiful plain, whoſe circumference is about fifteen leagues "and abounds in corn and paſture. Beſides, it was for- "merly one of the moſt populous regions of Beotia. "But the water of this lake, ſometimes, ſwells ſo vio- "lently, by the rains and melted ſnows, that it once in- "undated two hundred villages of the plain. It would "even be capable of producing a regular annual inunda- "tion, if Nature, aſſiſted, perhaps, by Art,† had not con-

* Voyage to Greece and the Levant, by *Spon*, vol. ii. pages 88 and 89.

† *Spon*, undoubtedly, did not conſider what he was ſaying, when he ſuggeſted an idea of the poſſibility of Art aſſiſting Nature in the conſtruction of five ſubterranean canals, each ten miles long, through a ſolid rock. Theſe ſubterranean canals are frequently met with in mountainous countries, of which I could produce a thouſand inſtances. They contribute to the circulation of waters, which could not otherwiſe force a paſſage through extended chains of mountains. Nature pierces the rocks, and ſends rivers

" trived for it an outlet, by five great canals, under the " adjacent mountain of the Euripus, between Negropont " and Talanda, through which the water of the lake is " gulped up, and throws itſelf into the Sea on the oppo- " ſite ſide of the mountain. The Greeks call this place " *Catabathra* : (the whirlpools.) Strabo, ſpeaking of this " lake, ſays, nevertheleſs, that there appeared no outlet " in his time, unleſs it be, that the Cephiſus, ſometimes, " forced a paſſage under ground. But it is only neceſſary " to read the account which he gives of the changes that " take place in this moraſs, not to be ſurpriſed at what

through the apertures, juſt as ſhe has pierced ſeveral of the bones of the human body, for the purpoſe of tranſmitting certain veins. I leave to the Reader the proſecution of this new idea. I have ſaid enough to convince him, that this Globe is not the production of diſorder or chance.

I ſhall conclude theſe obſervations, with a reflection reſpecting the two Travellers, whom I have been quoting: It may, perhaps, have a good moral effect. *Spon* was a Frenchman, and *George Wheeler* Engliſh. They travelled in company over the Archipelago. The former brought home with him a great collection of Greek inſcriptions and epitaphs; and the literati of the laſt age cried him up highly. The other has given us the names and characters of a great many very curious plants, which grow on the ruins of Greece, and which, in my opinion, convey a very affecting intereſt into his relations. He is little known among us.

According to the deſcriptive titles which each of theſe Gentlemen aſſumed, *Jacob Spon* was a Phyſician aſſociate of Lyons, and an eager inveſtigator of the monuments of man. *George Wheeler* was a Country Gentleman, and enthuſiaſtically attached to thoſe of Nature. Their taſtes, to judge from ſituations, ought to have been reverſed; and that the Gentleman ſhould have been fond of monumental inſcriptions, and the Phyſician of plants; but, as we ſhall have occaſion to obſerve, in the ſequel of theſe Studies, our paſſions ſpring out of contrarieties, and are, almoſt always, in oppoſition to our conditions. It was from an effect of this harmonic law of Nature, that though theſe Travellers were, the one Engliſh, and the other French, they lived in the moſt perfect union. I remark, to their honour, that they quote each other in terms of the higheſt reſpect and approbation.

Miniſters of State, would you form Societies which ſhall be cordially united among themſelves, do not aſſort Academicians with Academicians, Soldiers with Soldiers, Merchants with Merchants, Monks with Monks, but aſſociate Men of oppoſite conditions, and you will behold harmony pervade the aſſociation; provided, however, that you exclude the ambitious, which is indeed, no eaſy taſk, ambition being one of the firſt vices which our mode of education inſtils.

" he has affirmed of its outlets. Mr. *Wheeler*, who went " to examine this ſpot after my departure from Greece, " ſays it is one of the greateſt curioſities in the country, " the mountain being near ten miles broad, and almoſt en- " tirely one maſs of ſolid rock."

I have no doubt that ſeveral objections may be ſtarted againſt the haſty explanation which has been given of the courſe of the Tides, of the Earth's motion in the Ecliptic, and of the Univerſal Deluge, by the effuſions of the polar ices; but, I have the courage to repeat it, theſe phyſical cauſes preſent themſelves with a higher degree of probability, of ſimplicity and of conformity to the general progreſs of Nature, than the aſtronomical cauſes, ſo far beyond our reach, by which attempts have been made to explain them. It belongs to the impartial Reader to decide. If he is on his guard againſt the novelty of ſyſtems, which are not yet ſupported by puffers, he ought to be no leſs ſo, againſt the antiquity of thoſe which have many ſuch ſupporters.

Let us now return to the form of the great baſon of the Ocean. Two principal Currents croſs it from Eaſt to Weſt, and from North to South. The firſt, coming from the South Pole, puts in motion the Seas of India, and, directed along the eaſtern extent of the Old Continent, runs from Eaſt to Weſt, and from Weſt to Eaſt, in the courſe of the ſame year, forming, in the Indian Ocean, what are called the Monſoons. This we have already remarked; but what has not been hitherto brought forward, though it well deſerves to be ſo, is, that all the bays, creeks and mediterraneans of ſouthern Aſia, ſuch as the gulfs of Siam and Bengal, the Perſian Gulf, the Red Sea, and a great many others, are directed, relatively to this Current, North and South, ſo as not to be ſtemmed by it.

The ſecond Current, in like manner, iſſuing from the North Pole, gives an oppoſite movement to our Ocean, and, incloſed between the continent of America and ours, proceeds from North to South, and returns from South to

North in the ſame year, forming, like that of India, real Monſoons, though not ſo carefully obſerved by Navigators. All the bays and mediterraneans of Europe, as the Baltic, the Channel, the Bay of Biſcay, the Mediterranean properly ſo called; and all thoſe on the eaſtern coaſt of America, as the Bay of Baffin, Hudſon's Bay, the Gulf of Mexico, as well as many others which might be mentioned, are directed, relatively to this Current, Eaſt and Weſt; or, to ſpeak with more preciſion, the axis of all the openings of the Land in the Old and New Worlds, are perpendicular to the axis of theſe general Currents, ſo that their mouth only is croſſed by them, and their depth is not expoſed to the impulſions of the general movements of the Ocean.

It is becauſe of the calmneſs of bays, that ſo many veſſels run thither in queſt of anchoring ground; and it is for this reaſon that Nature has placed, in their bottoms, the mouths of moſt rivers, as we before obſerved, that their waters might be diſcharged into the Ocean, without being driven furiouſly back by the direction of its Currents. She has employed ſimilar precautions for the ſecurity of even the ſmalleſt ſtreams which empty themſelves into the Sea. There is not a ſingle experienced ſeaman who does not know, that there is ſcarcely a creek but what has its little rivulet. But for the Wiſdom apparent in theſe diſpoſitions, the ſtreams, deſtined to water the Earth muſt frequently have deluged it.

Nature employs ſtill other means for ſecuring the courſe of rivers, and eſpecially for protecting their diſcharges into the Sea. The chief of theſe are iſlands. Iſlands preſent, to the rivers, channels of different directions, that if the Winds, or the Currents of the Ocean, ſhould block up one of their outlets, the waters might have a free paſſage through another. It may be remarked, that ſhe has multiplied iſlands at the mouths of rivers the moſt expoſed to this twofold inconveniency; ſuch as, for example, at that of the Amazon, which is forever attacked by the Eaſt

wind, and ſituated on one of the moſt prominent parts of America. There they are ſo many in number, and form with each other channels of ſuch different courſes, that one outlet points North Eaſt, and another South Eaſt, and from the firſt to the laſt the diſtance is upward of a hundred leagues.

Fluviatic iſlands are not formed, as has been currently believed, of ſolid ſubſtances waſhed down by rivers, and aggregated: They are, on the contrary, for the moſt part, very much elevated above the level of theſe rivers, and many of them contain rivers and mountains of their own. Such elevated iſlands are, beſides, frequently found at the confluence of a ſmaller and a greater river. They ſerve to facilitate their communication, and to open a double paſſage to the current of the ſmaller river. As often then as you ſee iſlands in the channel of a great river, you may be aſſured there is ſome lateral inferior river, or rivulet, in the vicinity.

There are, in truth, many of theſe confluent rivulets which have been dried up by the ill adviſed labours of men, but you will always find, oppoſite to the iſlands which divided their confluence, a correſpondent valley, in which you may trace their ancient channel. There are, likewiſe, ſome of theſe iſlands in the midſt of the courſe of rivers, in places expoſed to the winds. I ſhall obſerve, by the way, that we recede very widely from the intentions of Nature, in reuniting the iſlands of a river to the adjoining Continent; for its waters, in this caſe, flow in only one ſingle channel, and when the winds happen to blow in oppoſition to the current, they can eſcape neither to the right nor to the left; they ſwell, they overflow, inundate the plains, carry away the bridges, and occaſion moſt of the ravages which, in modern times, ſo frequently endamage our cities.

We do not, then, find bays or gulfs at the extremities of the Currents of the Ocean; but, on the contrary, iſlands. At the extremity of the great eaſtern Current of

the Indian Ocean is placed the Iſland of Madagaſcar, which protects Africa againſt its violence. The iſlands of the Terra del Fuego defend, in like manner, the ſouthern extremity of America, at the confluence of the eaſtern and weſtern Currents of the South Seas. The numerous archipelagos of the Indian Ocean and South Sea are ſituated about the Line, where the two general Currents of the North and South Seas meet.

With iſlands, too, it is that Nature protects the inlets of bays and mediterraneans. Great Britain and Ireland cover that of the Baltic; the iſlands of Welcom and Good Fortune cover Hudſon's Bay; the iſland of St. Laurence protects the entrance of the gulf which bears that name; the chain of the Antilles, the gulf of Mexico; the iſles of Japan, the double gulf formed by the peninſula of Gorée with the country adjacent. All currents bear upon iſlands. Moſt of theſe are, for this reaſon, noted from their prodigious ſwells, and their guſts of wind; ſuch are the Azores, the Bermudas, the iſland of Triſtan, of Acunhah, &c. Not that they contain within themſelves the cauſes of ſuch phenomena, but from their being placed in the focuſes of the revolutions of the Ocean, and even of the Atmoſphere, for the purpoſe of weakening their effects. They are in poſitions nearly ſimilar to thoſe of Capes, which are all celebrated for the violent tempeſts which beat upon them: As Cape Finiſterre, at the extremity of Europe; the Cape of Good Hope, at that of Africa; and Cape Horn, at that of America. Hence comes the ſea proverb to *double the Cape*, to expreſs the ſurmounting of ſome great difficulty. The Ocean accordingly, inſtead of bearing upon the retiring parts of the Continent, ſets in upon thoſe which are moſt prominent; and it muſt ſpeedily have deſtroyed theſe, had not Nature fortified them in a moſt wonderful manner.

The weſtern coaſt of Africa is defended by a long bank of ſand, on which the billows of the Atlantic Ocean are

continually breaking. Brafil, in the whole extent of its ſhores, oppoſes to the winds, which blow continually from the Eaſt, and to the Currents of the Sea, a prodigious rampart of rocks, more than a thouſand leagues long, twenty paces broad at the ſummit, and of an unknown thickneſs at the baſe. It is a muſket ſhot diſtant from the beach. It is entirely covered at high water, and on the retreating of the tide, it exhibits the elevation of a peak. This enormous dike is compoſed of one ſolid maſs lengthwiſe, as has been aſcertained by repeated borings; and it would be impoſſible for a veſſel to get into Brafil, were it not for the ſeveral inlets which Nature has formed.*

Go from South to North, and you find ſimilar precautions employed. The coaſt of Norway is provided with a bulwark nearly reſembling that of Brafil. *Pont Oppidan* tells us, that this coaſt, which is nearly three hundred leagues in length, is, for the moſt part, ſteep, angular, and pendant; ſo that the Sea, in many places, preſents a depth of no leſs than three hundred fathoms cloſe in ſhore. This has not prevented Nature from protecting theſe coaſts, by a multitude of iſles, great and ſmall. "By ſuch a rampart," ſays that Author, "conſiſting of, perhaps, a million, or more, of maſſy ſtone pillars, founded in the very depth of the Sea, the chapiters of which riſe only a few fathoms above the ſurface, all Norway is defended to the Weſt, equally againſt the enemy, and againſt the Ocean." There are, however, ſome coaſt harbours behind this ſpecies of ſea bulwark, of a conſtruction ſo wonderful. But as there is frequently great danger, adds he, of ſhips being driven aſhore, before they can get into port, from the winds and currents which are very violent in the ſtraits of theſe rocks and iſles, and from the difficulty of anchoring in ſuch a vaſt depth of water, Government has been at the expenſe of faſtening ſeveral hundreds of ſtrong iron rings in the rocks, more

* See Hiſtory of the Troubles of Brafil, by *Peter Moreau*.

than two fathoms above water, by which veſſels may be ſafely moored.

Nature has infinitely varied theſe means of protection, eſpecially in the iſlands themſelves which protect the continent. She has, for example, ſurrounded the Iſle of France with a bank of madrépores, which opens only at the places where the rivers of that iſland empty themſelves into the Sea. Other iſlands, ſeveral of the Antilles in particular, were defended by foreſts of mangliers which grow in the ſea water, and break the violence of the waves, by yielding to their motion. To the deſtruction, perhaps, of theſe vegetable fortifications, we ought to aſcribe the irruptions of the Sea, now ſo frequent in ſeveral iſlands, particularly that of Formoſa. There are others which conſiſt of pure rock, riſing out of the boſom of the waves, like huge moles; ſuch is the Maritimo, in the Mediterranean. Others are volcanic, as the Iſle of Fuego, one of the Cape de Verd iſlands, and ſeveral others, of the ſame deſcription, in the South Sea, riſe like pyramids with fiery ſummits, and anſwer the purpoſe of lighthouſes to mariners, by their flame in the night time, and their ſmoke by day.

The Maldivia iſlands are defended againſt the Ocean, by precautions the moſt aſtoniſhing. In truth, they are more expoſed than many others, being ſituated in the very midſt of that great Current of the Indian Ocean, of which mention has been already made, and which paſſes and repaſſes them twice a year. They are, beſides, ſo low, as hardly to riſe above the level of the water; and they are ſo ſmall, and ſo numerous, that they have been computed at twelve thouſand, and ſeveral are ſo near each other, that it is poſſible to leap over the channel which divides them. Nature has firſt collected them into cluſters, or archipelagos, ſeparated from each other by deep channels which go from Eaſt to Weſt, and which preſent various paſſages to the general Current of the Indian Ocean. Theſe cluſters are thirteen in number, and extend, in a

row, from the eighth degree of northern to the fourth degree of ſouthern Latitude, which gives them a length of three hundred of our leagues of 25 to a degree.

But let us permit the intereſting and unfortunate *Francis Pyrard*, who there paſſed the flower of his days, in a ſtate of ſlavery, to deſcribe the architecture of them; for he has left us the beſt deſcription which we have of theſe iſlands, as if it were neceſſary that, in every caſe, things the moſt worthy of the eſteem of Mankind ſhould be the fruit of ſome calamity. "It is wonderful," ſays he, "to "behold each of theſe cluſters encompaſſed round and "round with a great bulwark of ſtone, ſuch as no human "art can pretend to equal in ſecuring a ſpot of ground "within walls.* Theſe cluſters are all roundiſh, or oval, "and are about thirty leagues each in circumference, ſome "a very little more, others a very little leſs, and are all in "a ſeries, and end to end, without any contract whatever. "There are, between every two, channels of the Sea, "ſome broad, others very narrow. When you are in "the centre of a cluſter, you ſee, all around, that great "bulwark of ſtone, which, as I have ſaid, encompaſſes "it, and defends the iſles againſt the impetuoſity of the "Ocean. But it is truly frightful, even to the boldeſt, "to approach this bulwark, and to behold the billows "coming from afar, to burſt with fury on every ſide: "For then, I aſſure you, as a thing I have ſeen a thouſ- "and and a thouſand times, the perturbation, or bubbling "over, exceeds the ſize of a houſe, and is whiter than a "fleece of cotton: So that you ſeem ſurrounded with a "wall of brilliant whiteneſs, eſpecially when Ocean is "in his majeſty."

Pyrard farther obſerves, that moſt of the iſles, incloſed in theſe ſubdiviſions, are ſurrounded, each in particular, by a particular bank, which farther defends them againſt the Sea. But the Current of the Indian Ocean, which

* Voyage to the Maldivias, chap. x.

paſſes through the parallel channels of theſe cluſters of iſlands, is ſo violent, that it would be impoſſible for Mankind to keep up a communication between one and another, had not Nature arranged all this in her own wonderful manner. She has divided each of theſe cluſters by two particular channels, which interſect them diagonally, and whoſe extremities exactly terminate at the extremities of the great parallel channels which ſeparate them. So that if you wiſh to paſs from one of theſe archipelagos to another, when the current is eaſterly, you take your departure from that where you happen to be, by the diagonal canal of the Eaſt, where the water is calm, and committing yourſelf afterward to the current which paſſes through the parallel channel, you proceed, in a deflecting courſe, to land on the oppoſite cluſter, into which you enter by the opening of its diagonal channel, which is to the Weſt. The mode of proceeding is reverſed, when the current changes ſix months afterwards. Through theſe interior communications the iſlanders, at all ſeaſons, can make excurſions from iſle to iſle, the whole length of the chain, from North to South, notwithſtanding the violence of the currents which ſeparate them.

Every iſle has its proper fortification, proportioned, if I may ſay ſo, to the danger to which it is expoſed from the billows of the Ocean. It is not neceſſary to ſuppoſe the water rouſed into a tempeſt, in order to form an idea of their fury. The ſimple action of the trade winds, however uniform, is ſufficient to give them, unremittingly, the moſt violent impulſion. Each of theſe billows, joining, to the conſtant velocity impreſſed upon it every inſtant by the wind, an acquired velocity, from its particular movement, would form, after running through a conſiderable ſpace, an enormous maſs of water, were not its courſe retarded by the currents which croſs it, by the calms which ſlacken it, but, above all, by the banks, the ſhallows, and the iſlands which break it.

A very perceptible effect of this accelerated velocity of the waves is visible on the coasts of Chili and Peru, which undergo, however, only the simple concussion and repercussion of the waters of the South Sea. The shores are inaccessible through their whole extent, unless at the bottom of some bay, or under the shelter of some island situated near the coast. All the islands of that vast Ocean, so peaceful as to have obtained the distinctive appellation of Pacific, are unapproachable on the side which is exposed to the Currents occasioned by the Trade Winds only, unless where shelves or rocks break the impetuosity of the billows. In that case, it is a spectacle at once magnificent and tremendous, to behold the vast fleeces of foam, which incessantly rise from the bosom of their dark and rugged windings; and to hear their hoarse roaring noise, especially in the night time, carried by the winds to several leagues distance.

Islands, then, are not fragments separated by violence from the Continents. Their position in the Ocean, the manner in which they are there defended, and the length of their duration, constitute a complete demonstration of this. Considering how long the Sea has been battering them with its utmost fury, they must have been, by this time, reduced to a state of total ruin. Scylla and Carybdis, nevertheless, emit to this day their ancient roarings, so as to be heard at the extremities of Sicily.

This is not the proper place to indicate the means which Nature employs to preserve the islands, and to repair them; nor the other proofs from the vegetable and animal kingdoms, and from Man, which evince that they have existed, such as we now see them, from the very origin of the Globe: It will be sufficient for me to give an idea of their construction, in order to produce perfect conviction in every candid mind, that they are in no one respect the work of chance. They contain, as Continents themselves do, mountains, peaks, rivers and lakes, proportioned to their magnitude. For the purpose of de-

monſtrating this new truth, I ſhall be ſtill under the neceſſity of ſaying ſomewhat reſpecting the diſtribution of the Globe; but I ſhall not be long, and ſhall endeavour to introduce nothing but what is abſolutely needful to make myſelf underſtood.

It is, firſt, to be remarked, that the chains of mountains in both Continents, are parallel to the Seas which waſh their coaſts: So that if you ſee the plan of one of theſe chains, with its different branches, you are able to determine the ſhore of the Sea which correſponds to them; for, as I have juſt ſaid, the mountains and theſe are always parallel. You may, in like manner, on ſeeing the ſinuoſities of a ſhore, determine thoſe of the chains of mountains which are in the interior of a country; for the gulfs of a Sea always correſpond to the valleys of the mountains of the lateral Continent.

Theſe correſpondencies are perceptible in the two great chains of the Old, and of the New Worlds. The long chain of Taurus runs Eaſt and Weſt, as does the Indian Ocean, the different gulfs of which it incloſes by branches prolonged as far as to the extremities of moſt of their Capes. On the contrary, the chain of the Andes, in America, runs North and South, like the Atlantic Ocean. There is, beſides, another thing worthy of remark, nay, I venture to ſay, of admiration, it is, that theſe chains of mountains are oppoſed to the regular winds which croſs thoſe Seas, and which convey the emanations from them; and that their elevation is proportioned to the diſtance at which they are placed from ſuch ſhores: So that the farther they are removed from the Sea, the greater is their elevation into the Atmoſphere.

For this reaſon it is, that the chain of the Andes is placed along the South Sea, where it receives the emanations of the Atlantic Ocean, wafted by the Eaſt wind over the vaſt Continent of America. The broader that Continent becomes, the greater is the elevation of that chain. Toward the iſthmus of Panama, where the Continent has no

great breadth, and, consequently, the distance from the Sea is small, the elevation of the mountains is inconsiderable: But they suddenly rise, precisely in proportion as the American Continent widens. Its highest mountains look over the broadest expansion of America, and are situated in the Latitude of Cape Saint Augustin.

The situation, and the elevation, of this chain were equally necessary to the fertility of this grand division of the New World. For, if this chain, instead of extending lengthwise, by the coast of the South Sea, had extended along the coasts of Brasil, it would have intercepted all the vapours conveyed over the Continent by the East wind; and if it were not elevated to a region of the Atmosphere, to which no vapour could ascend, because of the subtilty of the air, and of the intenseness of the cold, all the clouds borne by the East wind would be carried beyond it, into the South Sea. On either of these two suppositions, most of the rivers of South America would remain dry.

The same reasoning may be applied to the chain of Taurus. It presents to the Northern and Indian Oceans a double ridge, with opposite aspects, from which flow most of the rivers of the ancient Continent, some to the North, and others to the South. Its branches are disposed in like manner: They do not coast along the peninsulas of India, by their shores; but cross them through the middle at their full length; for the winds of these Seas do not blow always from one and the same quarter, as the East wind in the Atlantic Ocean; but six months in one direction, and six in another. It was proper, accordingly, to divide to them the land which they were intended to water.

It remains that I subjoin some farther observations respecting the configuration of these mountains, to confirm the use to which they are destined by Nature. They are crowned, from distance to distance, by long peaks similar to lofty pyramids. These peaks, as has been well observed, are of granite, at least, most of them. I do not know

the component parts of granite; but I know well, that theſe peaks attract the vapours of the Atmoſphere, and fix them around in ſuch a quantity, that they themſelves frequently diſappear. This is a remark which I have made times without number, with reſpect to the peak of Piterboth, in the Iſle of France, where I have ſeen the clouds driving before the South Eaſt wind, turn aſide perceptibly from their direction, and gather around it, ſo as ſometimes to form a very thick cap, which rendered the ſummit totally inviſible.

I had the curioſity to examine the nature of the rock of which it is compoſed. Inſtead of being formed of grains, it is full of ſmall holes, like the other rocks of the iſland; it melts in the fire, and when melted, you may perceive on its ſurface ſmall grains of copper. It is impoſſible to doubt that it muſt be impregnated with that metal; and to the copper we muſt, perhaps, aſcribe the virtue which it poſſeſſes of attracting the clouds. For it is known by experience, that this metal, as well as iron, has the property of attracting thunder. I do not know of what materials other peaks are compoſed; but it is very remarkable, that at the ſummit of the Andes, and on their ridges, are found the gold and ſilver mines of Chili and Peru, and that, in general, all mines of iron and copper are found at the ſource of rivers, and in elevated ſituations, where they diſcover themſelves by the fogs which ſurround them. Whatever may be in this, whether this attractive quality be common to granite, and to rocks of a different nature, or whether it depends on ſome metal which is amalgamated with them, I conſider all the peaks in the world as real electric needles.

But it was not ſufficient that clouds ſhould collect and fix on the tops of mountains, the rivers which have their ſources there, could have only an intermittent courſe. As ſoon as the rainy ſeaſon was at an end, the rivers muſt have ceaſed to flow. Nature, in order to remedy this inconveniency, has contrived, in the vicinity of their peaks,

lakes, which are real reſervoirs, or ciſterns, of water, to furniſh a regular and conſtant ſupply to their expenditure. Moſt of thoſe lakes are of an incredible depth; they anſwer ſeveral other purpoſes, ſuch as that of receiving the melted ſnows of the adjacent mountains, which would otherwiſe flow with too great rapidity. When they are once full, it requires a very conſiderable time to exhauſt them. They exiſt, either internally or externally, at the ſource of all regular currents of water; but when they are external, they are proportioned, either by their extent, or by their depth and their diſcharges, to the ſize of the river which they are deſigned to emit, as well as the peaks which are in the vicinity. Theſe correſpondencies muſt have undoubtedly been known to Antiquity; for I think I have ſeen ſome very ancient medals, in which rivers were repreſented by figures leaning on an urn, and ſtretched along at the baſis of a pyramid; which was probably deſigned to denote at once their ſource and their diſcharge.

If, then, we come to apply theſe general diſpoſitions of Nature to the particular conformation of iſlands, we ſhall ſee that they have, like Continents, mountains with branches parallel to their bays; that theſe mountains are of an elevation correſponding to their diſtance from the Sea; and that they contain peaks, lakes, and rivers, proportional to the extent of their territory. Like Continents, too, they have their mountains diſpoſed in a ſuitableneſs to the winds which blow over the Seas whereby they are ſurrounded. Thoſe which are in the Indian Ocean, as the Moluccas, have their mountains toward the centre, ſo as to receive the alternate influence of the two atmoſpheric Monſoons. Thoſe, on the contrary, which are under the regular influence of the Eaſt winds, in the Atlantic Ocean, as the Antilles, have their mountains thrown to the extremity of the iſland which is under the wind, preciſely as the Andes with reſpect to South America. The part of the iſland that is toward the wind, is, in the Antilles, called *cabſterre*, as who ſhould ſay *caput terræ* (the head of the

land;) and that which is from the wind *baſſeterre* (low land;) though, for the moſt part, ſays Father *du Terre*,* this laſt is higher, and more mountainous than the other.

The iſland of Juan Fernandez, which is in the South Sea, but very far beyond the Tropics, being in 33° 40′ of South Latitude, has its northern part formed of rocks very lofty and very ſteep, and its South ſide flat and low, to receive the influences of the South wind, which blows there almoſt all the year round. The deſcription of it is to be found in *Anſon*'s Voyage round the World.

The iſlands which deviate from theſe diſpoſitions, and which are but few in number, have remote relations ſtill more wonderful, and certainly well worthy of being ſtudied. They furniſh, beſides, in their vegetable and animal productions, other proofs, that they are ſmall Continents in miniature. But this is not the place to bring them forward. If they were, as is pretended, the remains of a great Continent ſwallowed up by the Ocean, they would have preſerved part, at leaſt, of their ancient and vaſt fabric. We ſhould ſee ariſe immediately out of the middle of the Sea, lofty peaks, like thoſe of the Andes, from twelve to fifteen hundred fathom high, without the mountains which ſupport them. In other places, we ſhould ſee theſe peaks ſupported by enormous mountains, proportioned to their magnitude, and which ſhould contain in their cavities great lakes, like that of Geneva, with rivers iſſuing from them, ſuch as the Rhône, and precipitating themſelves at once into the Sea, without watering any land. There ſhould be, at the bottom of their majeſtic protuberances, no plains, nor provinces, nor kingdoms. Theſe grand ruins of the Continent, in the midſt of the Ocean, would have ſome reſemblance to thoſe enormous pyramids reared in the ſands of Egypt, which preſent to the eye of the traveller only ſo many frivolous and unmeaning ſtructures; or to thoſe vaſt royal palaces, which the hand of time has

* Natural Hiſtory of the Antilles, page 12.

demoliſhed, of which you perceive turrets, columns, triumphal arches ; but the habitable parts of which are entirely deſtroyed. The ſage productions of Nature are not uſeleſs and tranſitory, like the works of Men. Every Iſland has its champaign country, its valleys, its hills, its hydraulick pyramids, and its Naïads, in proportion to its extent.

Sôme iſlands, it is true, but they are very few, contain mountains more elevated than the extent of their territory may ſeem to require. Such is that of Teneriff: Its peak is ſo high, as to be covered with ice a great part of the year. But that iſland contains mountains of no great elevation, which are proportioned to its bays : That of the mountains which ſupport the peak, ſwells up amidſt the others in form of a dome, not unlike the dome of the Invalids riſing above the adjacent buildings. I myſelf obſerved it with particular attention, and made a drawing of it, on my way to the Iſle of France. The lower mountains are an appertenance to the iſland, and the peak to Africa.

This peak, covered with ice, is ſituated directly oppoſite to the entrance of the great ſandy deſert, called Zara, and contributes, undoubtedly, to refreſh the ſhores and Atmoſphere of it, by the effuſion of its ſnows, which takes place in the midſt of Summer. Nature has placed other glaciers beſides, at the entrance of this burning deſert, ſuch as Mount Atlas. Mount Ida, in the Iſland of Crete, with its collateral mountains, covered at all ſeaſons with ſnow, is ſituated, according to the obſervation of *Tournefort*, preciſely oppoſite to the burning deſert of Barca, which coaſts along Egypt from North to South. Theſe obſervations will furniſh a farther opportunity of making ſome reflections on the chains of icy mountains, and of the Zones of ſand ſcattered over the Globe.

I ought to beg forgiveneſs of the Reader, for theſe digreſſions, into which I have been inſenſibly drawn; but I will render them as ſhort as I poſſibly can, though, by abridging them, their clearneſs is conſiderably diminiſhed.

The icy mountains appear to be principally deſigned to convey coolneſs to the ſhores of the Seas ſituated between the Tropics; and the Zones of ſand, on the contrary, to accelerate, by their heat, the fuſion of the polar ices. We can indicate, only in a curſory manner, theſe moſt wonderful harmonies; but it is ſufficient to peruſe the journals of Navigators, and to ſtudy geographical charts, to be convinced, that the principal part of the Continent of Africa is ſituated in ſuch a manner, that it is the wind of the North Pole which blows moſt conſtantly on its coaſts; and that the ſhore of South America projects beyond the Line, ſo as to be cooled by the wind of the South Pole. The Trade Winds, which prevail in the Atlantic Ocean, always participate of the influence of both Poles; that which is on our ſide draws conſiderably toward the North; and that which is beyond the Line depends greatly on the South Pole. Theſe two winds are not oriental, as has been erroneouſly imagined, but they blow nearly in the directions of the channel which ſeparates America from Africa.

The warm winds of the torrid Zone blow, in their turn, the moſt conſtantly toward the Poles; and it is ſingularly remarkable, that as Nature has placed icy mountains in its vicinity to cool its Seas, conjointly with thoſe of the Poles, as Taurus, Atlas, the Peak of Teneriff, Mount Ida, &c. ſhe has, likewiſe, extended a long Zone of ſand, in order to increaſe the heat of the South wind on its way to warm the Seas of the North. This Zone commences beyond Mount Atlas, and encompaſſes the Earth like a belt, extending from the moſt weſterly point of Africa to the moſt eaſterly extremity of Aſia, in a reduced diſtance of more than three thouſand leagues. Some branches of it deviate from the general direction, and advance directly toward the North.

We have already remarked, that a region all ſand is ſo hot, even in our Climates, from the multiplied reflection of its brilliant particles, that we never find the ſnow cov-

ering it for any conſiderable time together, even in the middle of our ſevereſt Winters. Thoſe who have croſſed the ſands of Eſtampes, in ſummer, and in the heat of the day, know well to what a violent degree the heat is there reverberated. It is ſo ardent, certain days in Summer, that, about twenty years ago, four or five paviers, who were at work on the great road leading to that City, between two banks of white ſand, were ſuffocated by it. Hence it may be concluded, from facts ſo obvious, that but for the ices of the Pole, and of the mountains in the vicinity of the torrid Zone, a very conſiderable portion of Africa and Aſia would be abſolutely uninhabitable, and that but for the ſands of Africa and Aſia, the ices of our pole would never melt.

Every icy mountain, too, has, like the Poles, its ſandy girdle, which accelerates the fuſion of its ſnows. This we have occaſion to remark, in the deſcription of all mountains of this ſpecies, as of the Peak of Teneriff, of Mount Ararat, of the Cordeliers, &c. Theſe Zones of ſand ſurround not only their baſes, but there are ſome of them on the higher regions of the mountains, up to the very peaks; it frequently requires ſeveral hours walking to get acroſs them.

The ſandy belts have a ſtill farther uſe, that of contributing to the repair of the waſte, which the territory of the mountain, from time to time, undergoes: Perpetual clouds of duſt iſſue from them, which riſe, in the firſt inſtance, on the ſhores of the Sea, where the Ocean forms the firſt depoſits of theſe ſands, which are there reduced to an impalpable powder by the inceſſant daſhing of the waves upon them; we afterwards find theſe clouds of duſt in the vicinity of lofty mountains. The conveyance of the ſands is made from the ſhores of the Sea into the interior of the Continent, at different ſeaſons, and in various manners. The moſt conſiderable happens at the Equinoxes, for then the Winds blow from the Sea into the Land. See what *Corneille le Bruyn* ſays of a ſandy tempeſt, in

which he was caught, on the ſhore of the Caſpian Sea. Theſe periodical conveyances of the ſand form a part of the general revolution of the Seaſons. But as to the interior of different countries, partial tranſits take place every day, which are very perceptible toward the more elevated regions of the Continents.

All travellers who have been at Pekin, are agreed, that it is not poſſible to go abroad, during a part of the year, into the ſtreets of that City, without having the face covered with a veil, on account of the ſand with which the air is loaded.

When *Iſbrand Ides* arrived on the frontiers of China, at the extremity of the outlet of the mountains in the neighbourhood of Xaixigar, that is, at that part of the creſt of the Aſiatic Continent, which is the moſt elevated, from which the rivers begin their courſes, ſome to the North, others to the South, he obſerved a regular period of theſe emanations. "Every day," ſays he,* "at noon "regularly, there blows a ſtrong guſt of wind, for two "hours together, which, joined to the ſultry heat of the "Sun by day, parches the ground to ſuch a degree, that "it raiſes a duſt almoſt inſupportable. I had obſerved "this change in the air ſome time before. About five "miles above Xaixigar, I had perceived the Heavens "cloudy, over the whole extent of the mountains; and "when I was on the point of leaving them, I ſaw perfect "ſerenity. I even remarked at the place where they ter"minate, an arch of clouds, which ſweeped from Weſt "to Eaſt, as far as the mountains of Albaſe, and which "ſeemed to form a ſeparation of Climate." Mountains, accordingly, poſſeſs, at once, nebulous and foſſil attractions. The firſt furniſh water to the ſources of the rivers which iſſue from them, and the ſecond ſupply them with ſand, for keeping up their territory and their minerals.

* Journey from Moſcow to China, chap. xi.

The icy and ſandy Zones are found in a different harmony, on the Continent of the New World. They run, like its Seas, from North to South, whereas thoſe of the Old Continent are directed, conformably to the length-wiſe direction of the Indian Ocean, from Weſt to Eaſt.

It is very remarkable, that the influence of icy mountains extends farther over the Ocean than over the Land. We have ſeen thoſe of the two Poles take the direction of the channel of the Atlantic Ocean. The ſnows which cover the long chain of the Andes, in America, ſerve, in like manner, to cool the whole of the South Sea, by the action of the Eaſt wind which paſſes over it; but as part of that Sea, and of its ſhores, which is ſheltered from this wind, by the very height of the Andes, would have been expoſed to an exceſſive heat, Nature has formed an elbow weſtward, at the moſt ſoutherly part of America, which is covered with icy mountains, ſo that the freſh breezes, which perpetually iſſue from them, may graze along the ſhores of Chili and Peru. Theſe breezes, denominated the ſoutherly, prevail there all the year round, if we may believe the teſtimony of every Navigator. They do not, in truth, come from the South Pole; for if it were ſo, no veſſel could ever double Cape Horn; but they come from the extremity of Magellan's Land, which is evidently bent backward, with relation to the ſhores of the South Sea.

The ices of the Poles, then, renovate the waters of the Sea, as the ices of mountains renovate thoſe of the great rivers. Theſe effuſions of the polar ices preſs toward the Line, from the action of the Sun, who is inceſſantly pumping up the waters of the Sea, in the torrid Zone, and determines, by this diminution of bulk, the waters of the Poles to ruſh thitherward. This is the firſt cauſe of the motion of the South Seas, as has been already obſerved. It would appear highly probable, that the polar effuſions are proportioned to the evaporations of the Ocean. But without loſing ſight of the leading object of our en-

quiry, we ſhall examine for what reaſon Nature has taken ſtill greater care to cool the Seas, than the Land, of the torrid Zone : For it merits attention, that not only the polar Winds which blow there, but moſt of the rivers which empty themſelves into the South Seas, have their ſources in icy mountains, ſuch as the Zara, the Amazon, the Oroonoko, &c.

The Sea was deſtined to receive, by means of the rivers, all the ſpoils of vegetable and animal productions over the whole Earth ; and as its courſe is determined toward the Line, by the daily diminution of its waters, which the Sun is there continually evaporating, its ſhores, within the torrid Zone, would have been quickly liable to putrefaction, had not Nature employed theſe different methods to keep them cool. It is for this reaſon, as certain Philoſophers allege, that the Sea is ſalt between the Tropics. But it is likewiſe ſo to the North ; nay, more ſo, if we may rely on the recent experiments of the intereſting M. *de Pages*. It is the ſalteſt, and the heavieſt in the World, according to the teſtimony of an Engliſh Navigator, Captain *Wood*, in 1676.

Beſides, the ſaltneſs of the Sea does not preſerve its waters from corruption, as is vulgarly believed. All who have been at Sea know well, that if a bottle, or a caſk, is filled, in hot climates, with ſea water, it ſoon becomes putrid. Sea water is not a pickle ; it is, on the contrary, a real lixivial, which very quickly diſſolves dead bodies. Though ſalt to the taſte, it takes out ſalt ſooner than freſh water, as our common ſailors know, from daily experience, who employ no other, in freſhening their ſalt proviſions. It blanches, on the ſhore, the bones of all animals, as well as the madrépores, which, when in a ſtate of life, are brown, red, and of various other colours, but which, being rooted up, and put into ſea water, on the brink of the ſhore, in a little time become white as ſnow. Nay more, if you fiſh in the ſea for a crab, or a ſea urchin, and have them dried, to preſerve them, unleſs you

firſt waſh them in freſh water, all the claws of the crab, and all the prickles of the urchin, will fall off. The joints by which the limbs are attached, diſſolve in proportion as the ſea water, with which they were moiſtened, evaporates. I myſelf have made this experiment to my coſt. The water of the Sea is impregnated not only with ſalt, but with bitumen, and other ſubſtances beſides, which we do not know; but ſalt is in it, in ſuch a proportion, as to aſſiſt the diſſolution of cadaverous bodies floating in it, as that which we mingle with our food aſſiſts digeſtion. Had Nature made it a pickle, the Ocean would be covered with all the impurities of the Earth, which would thus be kept in a ſtate of perpetual preſervation.

Theſe obſervations will indicate to us the uſe of volcanoes. They do not proceed from the internal fires of the Earth, but they derive their origin, and the materials which keep them up, from the waters. In order to be convinced of this, you have only to remark, that there is not a ſingle volcano in the interior of Continents, unleſs it be in the vicinity of ſome great lake, ſuch as that of Mexico. They are ſituated, for the moſt part, in iſlands, at the extremity, or at the confluence of the Currents of the Sea, and in the counter tide of their waters. This is the reaſon why we find them in ſuch numbers toward the Line, and along the ſhore of the South Sea, where the South wind, which perpetually blows there, brings back all the ſubſtances ſwimming about in a ſtate of diſſolution.

Another proof that they owe their ſupport to the Sea is this, that, in their eruptions, they frequently vomit out torrents of ſalt water. *Newton* aſcribed their origin, and their duration, to caverns of ſulphur, incloſed in the bowels of the Earth. But that great man had not reflected on the poſition of volcanoes in the vicinity of water, nor calculated the prodigious quantity of ſulphur, which the magnitude, and the duration, of their fires muſt have required. Veſuvius alone, which burns night and day, from time immemorial, would have conſumed a maſs of it larg-

er than the whole kingdom of Naples. Beſides, Nature does nothing in vain. What purpoſe could be anſwered by ſuch magazines of ſulphur in the interior of the Earth? We ſhould find them completely entire in places, where they are not conſumed by the fire. Mines of ſulphur are no where found but in the vicinity of volcanoes. What, beſides, could renovate them when exhauſted? A ſupply ſo conſtant, for keeping up volcanoes, is not in the Earth, but in the Sea. It is furniſhed by the oils, the bitumens, and the nitres of vegetables and animals, which the rains and the rivers convey off from every quarter into the Ocean, where the diſſolution of all bodies is completed by its lixivial water. To theſe are joined metallic diſſolutions, and eſpecially thoſe of iron, which, as is well known, abounds all over the earth. Volcanoes take fire, and feed themſelves with all theſe ſubſtances.

Lemery, the Chymiſt, has imitated their effects, by a compoſition conſiſting of filings of iron, ſulphur and nitre, moiſtened with water, which caught fire of itſelf. If Nature had not kindled theſe vaſt furnaces on the ſhores of the Ocean, its waters would be covered with vegetable and animal oils, which could never evaporate, for they reſiſt the action of the air. You may have frequently obſerved them, when ſtagnated in ſome undiſturbed baſon, from their colour reſembling the pigeon's neck. Nature purifies the waters by the fire of volcanoes, as ſhe purifies the air by thoſe of thunder; and as ſtorms are more common in hot countries, ſhe has in theſe, likewiſe, multiplied volcanoes, and for the ſame reaſon. She burns on the ſhores the impurities of the Sea, as a Gardener burns, at the end of Autumn, the refuſe of his garden.

We find lavas, indeed, in the interior of countries; but a proof that they are indebted to the water for their original is this, that the volcanoes which produced them, became extinct whenever the waters failed them. Theſe volcanoes were kindled, like thoſe which ſtill ſubſiſt, by vegetable and animal fermentations, with which the Earth

was covered after the Deluge, when the ſpoils of ſo many foreſts, and of ſo many animals, whoſe trunks and bones are ſtill found in our quarries, floated on the ſurface of the Ocean, and formed prodigious depoſits, which the currents accumulated in the cavities of the mountains. It cannot be doubted, that in this ſtate, they caught fire by the effect of fermentation merely, juſt as we ſee ſtacks of damp hay catch fire in our meadows. It is impoſſible to call in queſtion theſe ancient conflagrations, the traditions of which are preſerved in Antiquity, and which immediately follow thoſe of the Deluge. In the ancient Mythology, the hiſtory of the ſerpent Python, produced by the corruption of the waters, and that of Phaëton, who ſet the world on fire, immediately follow the hiſtory of Philemon and Baucis,* eſcaped from the waters of the Deluge, and are allegories of the peſtilence, and of the volcanoes, which were the firſt reſults of the general diſſolution of animals and vegetables.

All that now remains is, to refute the opinion of thoſe who maintain, that the Earth is a ſecretion from the Sun. The chief arguments by which they ſupport it are its volcanoes, its granites, the vitrified ſtones ſcattered over its ſurface, and its progreſſive refrigeration from year to year. I reſpect the celebrated Author who has advanced this opinion, but I venture to affirm, that the grandeur of the images which this idea preſented to him, has ſeduced his imagination.

We have ſaid enough reſpecting volcanoes, to demonſtrate that they do not proceed from the interior of the Earth. As to granites, they do not preſent, in the aggregation of their grains, the remoteſt veſtige of the action of fire. I do not know their origin; but certainly there is no foundation for referring it to that element, becauſe it cannot be aſcribed to the action of water, and becauſe ſhells are not found in them. As this aſſertion is deſtitute

* The Author, undoubtedly, means Deucalion and Pyrrha.

of all proof, it is unneceſſary to undertake a refutation of it. I ſhall obſerve, however, that granites do not appear to be the production of fire, on a compariſon with the lavas of volcanoes; the difference of their ſubſtances ſuppoſes different cauſes in their formation.

Agates, flints, and every ſpecies of the ſilex, ſeem to be analogous to vitrifications, from their half tranſparency, and from their being uſually found in beds of marl, which reſemble banks of lime extinguiſhed; but theſe ſubſtances are not the productions of fire, for lavas never preſent any thing ſimilar. I have picked up, on the flinty hills of Lower Normandy, oyſter ſhells perfectly complete, amalgamated with black flints, which they call *biſets*. Had theſe biſets been vitrified by fire, they would have calcined, or, at leaſt, altered the oyſter ſhells which adhered to them; but theſe were as ſound as if juſt taken out of the water. The ſhelving ſea coaſt along the diſtrict of Caux, are formed of alternate ſtrata of marl and biſets, ſo that, as they are cut perpendicularly, you would call it a great wall, of which the layers had been regulated by an Architect; and with ſo much the greater appearance of probability, that the people of the country build their houſes of the ſame materials, diſpoſed in the ſelf ſame order.

Theſe banks of marl are from one to two feet broad, and the rows of flints, which ſeparate them, are three or four inches thick. I have reckoned ſeventy or eighty of ſuch horizontal ſtrata from the level of the Sea up to that of the Land. The thickeſt are undermoſt, and the ſmaller atop, which, from the ſea mark, makes the aggregate appear higher than it really is; as if Nature intended to employ a certain degree of perſpective to increaſe the apparent elevation: But, undoubtedly, ſhe has been determined to adopt this arrangement from reaſons of ſolidity, which are perceptible in all her Works. Now, theſe banks of marl and flint are filled with ſhells, which have undergone no alteration from the force of fire, and which would be in perfect preſervation, had not the preſſure of

that enormous mafs broken in pieces the largeft of them. I have feen fragments extracted of that which is called the *tuilée*, which is found alive only in the Indian Ocean, and the broken pieces of which, when put together, formed a fhell much more conſiderable than thoſe of the ſame ſpecies which are uſed for holding the holy water, in the church of Saint Sulpice at Paris.

I have, likewiſe, remarked there a bed of flints completely amalgamated, and forming a ſingle table, the ſection of which was perceptibly about one inch thick by more than thirty feet in length. Its depth in the cliff I did not aſcertain; but, with a little art, it might be detached, and faſhioned into the moſt ſuperb agate table in the world. Wherever theſe marls and flints are found, ſhells are likewiſe found in great quantities, ſo that as marl has been evidently formed of their wreck, it appears to me extremely probable, that the flints have been compoſed of the very ſubſtance of the fiſhes which were there incloſed.

This opinion will appear leſs extraordinary, if we obſerve that many of the *cornes d' ammon*, and of ſingle ſhelled foſſils, which, from their form, have reſiſted the preſſure of the ground, and not being compreſſed by it, have not ejected, like the double ſhelled, the animal matter which they contained, but exhibit it within them, under the form of cryſtals, with which they are uſually filled, whereas the two ſhelled are totally deſtitute of it.

The animal ſubſtances of theſe laſt, I preſume, confounded with their cruſhed fragments, have formed the different coloured paſtes of marble, and have communicated to them the hardneſs and poliſh of which theſe marbles are ſuſceptible. This ſubſtance preſents itſelf, even in ſhell fiſh when alive, with the characters of agate, as may be ſeen in ſeveral kinds of mother of pearl, and among others, in the half tranſparent, and very hard knob, which terminates what is called the *harp*. Finally, this ſtony ſubſtance is found, beſides, in land animals; for I have

ſeen, in Sileſia, the eggs of a ſpecies of the woodcock, which are highly prized in that country, not only becauſe they are a great delicacy for the table, but becauſe the white, when dried, becomes hard as a flint, and ſuſceptible of a poliſh ſo beautiful, that they are cut and ſet as rings and other trinkets.

I could eaſily ſwell this article, by demonſtrating the geometrical impoſſibility that our Globe ſhould have been detached from that of the Sun, by the tranſit of a Comet, becauſe it muſt have, on the very hypotheſis of this impulſion, been hurried along in the Sphere of the Comet's attraction, or carried back into that of the Sun. It has, in truth, remained in the ſphere of the Sun's attraction; but it is not eaſy to conceive how it never came to approach nearer, and how it comes to maintain the diſtance of nearly thirtytwo millions of leagues, while no Comet prevents its returning to the place from which it ſet out. The Sun, it is ſaid, has a centrifugal force. The Globe of the Earth, therefore, muſt be retiring from it. No, it is alleged, becauſe the Earth has a conſtant tendency toward that Luminary. It muſt, accordingly, have loſt the centrifugal force, which ſhould adhere to its very nature, as being a portion of the Sun.

I could go on to ſwell the article, by farther demonſtrating the phyſical impoſſibility, that the Earth ſhould contain in its bowels ſo many heterogeneous ſubſtances on the ſuppoſition of its being a ſeparation from a body ſo homogeneous as the Sun; and I could make it appear, that it is impoſſible they ſhould be, in any reſpect, conſidered as the wreck of ſolar and vitrified ſubſtances (if it be poſſible for us to have an idea of the ſubſtances from which light iſſues) ſeeing ſome of our terreſtrial Elements, ſuch as Water and Fire, are abſolutely incompatible. But I ſhall confine myſelf to the refrigeration aſcribed to the Earth, becauſe the evidence on which this opinion reſts, is level to the comprehenſion of all men, and is of importance to their ſecurity.

If the Earth is getting colder and colder, the Sun, from which it is faid to have been feparated, muft be getting cold in proportion; and the mutual diminution of the heat in thefe two Globes, muft become perceptible in a courfe of ages, at leaft on the furface of the Earth, in the evaporations of the Seas, in the diminution of rains, and efpecially in the fucceffive deftruction of a great number of plants, which are killed every day, merely from the diminition of only a few degrees of heat, when the Climate is changed upon them. Not a fingle plant, however, has been loft of all thofe which were known to Circé, the moft ancient of Botanifts, whofe Herbal Homer has, in fome meafure, preferved for us. The plants celebrated in fong by Orpheus, and their virtues, fubfift to this day. There is not even a fingle one which has loft any thing of its ancient attitude. The jealous Clytia ftill turns toward the Sun; and the beautiful fon of Liriope, Narciffus, continues to admire himfelf on the brink of the fountain.

Such are the teftimonies adduced from the vegetable kingdom, refpecting the uniformity and conftancy of the temperature of the Globe; let us examine thofe of the Human Race. There are fome of the inhabitants of Switzerland, it is alleged, who have perceived a progreffive accumulation of the ices on their mountains. I could oppofe to this evidence, that of other modern Obfervers, who, in the view of ingratiating themfelves with the Princes of the North, pretend, with as little foundation, that the cold is diminifhing there, becaufe thefe Princes have thought proper to cut down the forefts of their States; but I fhall adhere to the teftimony of the Ancients, who could not poffibly intend to flatter any one on a fubject of this nature.

If the refrigeration of the Earth is perceptible in the life of one man, it muft be much more fo in the life of Mankind; now, all the temperatures defcribed by the moft ancient Hiftorians, as that of Germany by Tacitus,

of Gaul by Cefar, of Greece by Plutarch, of Thrace by Xenophon, are precifely the fame at this day, as they were at the time when thefe feveral Hiftorians wrote. The Book of Job the Arabian, which, there is reafon to believe, is more ancient than the Writings of Mofes, and which contains views of Nature much more profound than is generally imagined, views, the moft common whereof were unknown to us two centuries ago, makes frequent mention of the falling of the fnows in that country, that is, toward the thirtieth degree of North Latitude. Mount Lebanon, from the remoteft antiquity, bears the Arabian name of *Liban*, which fignifies white, on account of the fnows with which its fummit is covered all the year round. Homer relates that it fnowed in Ithaca when Ulyffes arrived there, which obliged him to borrow a cloak of the good Eumeus.

If, during a period of three thoufand years, and more, the cold had gone on increafing from year to year, in all thefe Climates, their Winters muft now have been as long and as fevere, as in Greenland. But Lebanon, and the lofty provinces of Afia, have preferved the fame temperature. The little Ifle of Ithaca is ftill covered in Winter with the hoar froft; and it produces, as in the days of Telemachus, the laurel and the olive.

STUDY FOURTH.

REPLY TO THE OBJECTIONS AGAINST PROVIDENCE, FOUNDED ON THE DISORDERS OF THE VEGETABLE KINGDOM.

THE Earth is, say the Objectors, a garden very injudiciously laid out. Men of wit, who never travelled, have amused themselves with painting it, proceeding from the hand of Nature, as if the giants had been fighting in it. They represent its rivers flowing at random; its morasses as vast collections of mud; the trees of its forests turned upside down; its plains buried under rocks, or overspread with briars and thorns; all its highways rendered unpassable; all its culture the puny efforts of human genius. Such representations, though picturesque, have, I acknowledge, sometimes afflicted me, because they inspired me with distrust of the AUTHOR of Nature. To no purpose could it be supposed that, in other respects, He had loaded Man with benefits; one of our first and most pressing necessities had been overlooked, if He had neglected to care for our habitation.

The inundations of rivers, such as those of the Amazon, of the Oroonoko, and a great many others, are periodical. They manure the lands which they inundate. It is well known, besides, that the banks of these rivers swarmed with populous nations, before any European had formed a settlement there. The inhabitants derived much benefit

from theſe inundations, partly from the abundance of the fiſheries, partly from the fertility communicated to the lands. So far from conſidering them as convulſions of Nature, they received them as bleſſings from Heaven, juſt as the Egyptians prized the overflowings of the Nile. Was it, then, a mortifying ſpectacle to them, to ſee their deep foreſts interſected with long alleys of water, which they could without trouble traverſe, in all directions, in their canoes, and pick the fruits at their eaſe? Nay, certain tribes ſuch as thoſe of the Oroonoko, determined by theſe accommodations, had acquired the ſingular habit of dwelling on the tops of trees, and of ſeeking under their foliage, like the birds, an habitation, and food, and a fortreſs. Whatever may be in this, moſt of them inhabited only the banks of the rivers, and preferred them to the vaſt deſerts with which they are ſurrounded, though not expoſed to inundations.

We ſee order only where we can ſee corn grow. The habit which we have acquired of confining the channels of our rivers within dikes and mounds, of gravelling, and paving our high roads, of applying the ſtraight line to the alleys in our gardens, and to our baſons of water, of ſquaring our parterres, nay, our very trees, accuſtoms us inſenſibly to conſider every thing which deviates from our rectangles, as abandoned to confuſion. But it is in places with which we have been tampering, that we frequently ſee real diſorder. We ſet fountains a playing on the tops of mountains; we plant poplars and limes upon rocks; we throw our vineyards into valleys, and raiſe our meadows to the declivities of hills.

Let theſe laborious exertions be relaxed ever ſo little, and all theſe petty levellings will preſently be confounded under the general levelling of Continents, and all this culture, the work of Man, diſappears before that of Nature. Our ſheets of water degenerate into marſhes; our hedge row elms burſt into luxuriancy; every bower is choked, every avenue cloſes: The vegetables natural to

each ſoil declare war againſt the ſtrangers; the ſtarry thiſtle and vigorous verbaſcum, ſtifle under their broad leaves the Engliſh ſhort graſſy ſod; thick crops of rye graſs and trefoil gather round the trees of Paleſtine; the bramble ſcrambles along their ſtem, with its prickly claws, as if mounting a breach; tufts of nettles take poſſeſſion of the urn of the Naïads, and foreſts of reeds, of the forges of Vulcan; greeniſh ſcales of minium corrode the faces of our Venuſes, without paying any reſpect to their beauty. The trees themſelves lay ſiege to the caſtle; the wild cherry, the elm, the maple, mount upon its ridges, plunge their long pivots into its lofty pediments, and, at length, obtain the victory over its haughty cupolas. The ruins of a park no leſs merit the reflections of the Sage, than thoſe of an empire: They equally demonſtrate how inefficient the power of Man is, when ſtruggling againſt that of Nature.

I have not had the felicity, like the primitive Navigators, who diſcovered uninhabited iſlands, to contemplate the face of the ground as it came from the hand of the CREATOR; but I have ſeen portions of it which had undergone alterations ſufficiently ſmall to ſatisfy me, that nothing could then equal their virgin beauties. They had produced an influence on the firſt relations which were formed by them, and had diffuſed over theſe a freſhneſs, a colouring, a native grace inexpreſſible, which will ever diſtinguiſh them to advantage, notwithſtanding their ſimplicity, from the learned deſcriptions which have been given of them in modern times.

To the influence of theſe firſt aſpects, I aſcribe the ſuperior talents of the earlieſt Writers who have painted Nature, and the ſublime enthuſiaſm which a Homer and an Orpheus have transfuſed into their poëſy. Among the Moderns, the Hiſtorian of *Anſon*'s expedition, *Cook*, *Banks*, *Solander*, and ſome others, have deſcribed ſeveral of theſe natural ſites, in the iſlands of Tinian, Maſſo, Juan Fernandez and Taïti, which have delighted all perſons

of real taſte, though theſe iſlands had been, in part, degraded by the Indians and Spaniards.

I have ſeen only countries frequented by Europeans, and deſolated by war, or by ſlavery: But I ſhall ever recollect with pleaſure two of theſe ſites, the one on this ſide the Tropic of Capricorn; the other beyond the ſixtieth degree of North Latitude. Notwithſtanding my inability, I am going to attempt a ſketch of theſe, in order to convey, as well as I can, an idea of the manner in which Nature diſpoſes her plans in Climates ſo very oppoſite.

The firſt was a part, then uninhabited, of the Iſle of France, of fourteen leagues extent, which appeared to me the moſt beautiful portion of it, though the black free booters, who take refuge there, had cut down, on the ſea ſhore, the lataniers with which they fabricate their huts, and on the mountains, the palmettos, whoſe tips they uſe as food, and the liannes, of which they make fiſhing nets. They likewiſe degrade the banks of the rivulets, by digging out the bulbous roots of the nymphæa, on which they live, and even thoſe of the Sea, of which they eat, without exception, every ſpecies of the ſhelly tribes, and which they leave here and there on the ſhore, in great piles burnt up. Notwithſtanding theſe diſorders, that part of the iſland had preſerved traces of its ancient beauty. It is perpetually expoſed to the South eaſt wind, which prevents the foreſts that cover it from extending quite down to the brink of the Sea; but a broad ſelvage of turf, of a beautiful ſea green, which ſurrounds it, facilitates the communication all around, and harmonizes, on the one ſide, with the verdure of the woods, and, on the other, with the azure of the billows.

The view is thus divided into two aſpects, the one preſenting land, the other water. The land proſpect preſents hills flying behind each other, in the form of an amphitheatre, and whoſe contours, covered with trees in pyramids, exhibit a majeſtic profile on the vault of Heaven. Over theſe foreſts riſes, as it were, a ſecond foreſt of palmettos,

which balance, above the ſolitary valleys, their long columns, crowned with particoloured plumes of palms, and ſurmounted with a ſpiral peak. The mountains of the interior preſent, at a diſtance, oval ſhaped rocks, clothed with great trees, and pendent liannes, floating, like drapery, by every breath of the wind. Above theſe riſe lofty pinnacles, round which are continually collected the rainy clouds; and when theſe are illuminated by the rays of the Sun, you ſee the colours of the rainbow painted on their peaks, and the rain water flowing over their duſky ſides in brilliant ſheets of chryſtal, or in long fillets of ſilver. No obſtacle prevents your perambulating the borders which embelliſh their ſides and their baſes, for the rivulets which deſcend from the mountains, preſent, along their banks, ſlips of ſand, or broad plates of rock, from which they have waſhed the earth clean away. Beſides, they clear away a free paſſage from their ſource, to the place of their diſcharge, by undermining the trees which would grow in their channel, and by fertilizing thoſe which do grow on their margin; and they expand over theſe, through their whole courſe, great arches of verdure which fly off in perſpective, and which are viſible from the ſhore of the Sea. The liannes interweave themſelves along the circumference of theſe arches, ſecure their arcades againſt the winds, and decorate them moſt beautifully, by oppoſing to their foilage other foilages, and to their verdure garlands of gloſſy flowers, or pods of various colours. If a tree, waſted by age, happens to fall down, Nature, which univerſally haſtens on the deſtruction of all uſeleſs beings, covers its trunk with maiden hair of the moſt beautiful green, and agarics undulated with yellow, ſaffron and purple, which feed on its ſpoils.

Toward the ſea ſide, the turf which borders the iſland, is up and down ſowed with thickets of latanier, whoſe palms, formed into a fan, and attached to pliant membranes, radiate in the air, like ſo many verdant ſuns. Theſe lataniers advance even into the Sea, on the capes

of the iſland, with the land fowls which inhabit them; while the ſmall bays, ſwarming with multitudes of ſea fowl which ſwim in the water, and which are paved, if I may be allowed the expreſſion, with madrépores of the colour of the peach bloſſom; the black rocks covered with roſe coloured nerits, and ſhells of every kind, penetrate into the iſland, and reflect, like ſo many mirrors, all the objects of the Land and of the Heavens. You would imagine that you ſaw the birds flying in the water, and the fiſhes ſwimming among the trees, and you would be tempted to ſay, Here is the marriage of *Terra* and *Oceanus*, who thus blend and confound their domains.

In the greateſt part even of uninhabited iſlands, lying between the Tropics, when the diſcovery of them was made, the banks of ſand which ſurround them were found to be filled with turtle, which came thither to lay their eggs, and with the ſcarlet flamingos, which, as they ſit on their neſts, reſemble burning torches. They had, beſides, a border of mangliers, covered with oyſters, which oppoſed their floating foliage to the violence of the waves, and of cocoa trees loaded with fruit, which advancing into the very ſea, along the breakers, preſented, to the mariner's eye, the aſpect of a city with its ramparts and its avenues, and announced to them from afar the aſylum prepared for them by the God of the Seas. Theſe different kinds of beauty muſt have been common to the Iſle of France, with many other iſlands, and were, in all probability, deſtroyed by the craving neceſſities of the firſt mariners who landed upon them. Such is the very imperfect repreſentation of a country, the Climate of which, according to ancient Philoſophers, was uninhabitable, and the ſoil of which modern Philoſophers conſider as a ſcum of the Ocean, or of volcanoes.

The ſecond rural ſcenery, which I ſurveyed with rapture, and of which I am going to attempt a deſcription, was in Ruſſian Finland, when I was employed, in 1764, on a viſitation of its fortreſſes with the Generals of the

corps of Engineers, in which I then ſerved. We were travelling between Sweden and Ruſſia, through a country ſo little frequented, that the firs had encroached on the great line of demarkation which ſeparates the boundaries of the two countries. It was impoſſible to get through in a carriage, and we were under the neceſſity of employing the country people to cut down the trees, that our equipages might follow us. We were able, however, to penetrate, in every direction, on foot, and frequently on horſeback, though we were obliged to inſpect the windings, the ſummits, and the ſmalleſt receſſes of a great number of rocks, in order to aſcertain their natural capability of defence, and though Finland is ſo covered with theſe, that ancient Geographers have given it the ſurname of *Lapidoſa* (ſtony.)

Not only are thoſe rocks ſcattered about in great blocks, over the ſurface of the earth, but the valleys, and entire hills, are there, in many places, formed of a ſingle maſs of ſolid rock. This rock is a ſoft granite which exfoliates, and whoſe ſcurf fertilizes the plants, at the ſame time that the enormous maſs ſhelters them from the North Wind, and reflects on them the rays of the Sun, by their curves, and the particles of mica with which it is filled. The bottoms of theſe valleys were ſkirted with long borders of meadow, which every where facilitate the communication. At the places where they were pure rock, as in their original ſtate, they were covered with a plant, called, by the natives, *Kloukva*, which thrives on the rock. It comes out of the clefts, and ſeldom riſes higher than a foot and a half; but it ſpreads in all directions, and extends far and wide. Its leaves and verdure reſemble thoſe of the box, and its boughs are loaded with a red berry, good to eat, reſembling the ſtrawberry.

The fir, the birch, and the ſervice tree vegetated wonderfully well on the ſides of thoſe hills, though in many places, they found ſcarcely earth ſufficient in which to inſert their roots. The ſummits of moſt of them were

rounded in form of a ſcull cap, and rendered quite gliſtering by the water which oozed acroſs the long crevices that furrowed them. Many of theſe ſcull caps were perfectly bare, and ſo ſlippery, that it was difficult to walk over them. They were crowned, round and round, with a broad belt of moſs of an emerald green, out of which ſtarted here and there an infinite multitude of muſhrooms of every form, and of every colour. Some of them were ſhaped like large ſcarlet coloured tweezer caſes, ſtudded with dots of white; others were orange coloured and formed like a paraſol; others yellow as ſaffron, and of the oblong form of an egg. Some were of the pureſt white, and ſo well rounded, that you would have taken them for ivory draughtſmen.

Theſe moſſes and muſhrooms ſpread along the threads of water which flowed from the ſummits of the rocky hills, extended in long rays acroſs the woods with which their ſides were covered, and proceeded to ſkirt their extremities, till they were confounded with a multitude of ſtrawberry and raſpberry plants. Nature, to indemnify this country for the ſcarcity of apparent flowers to pleaſe the eye, of which it produces but few, has beſtowed their perfumes on ſeveral plants, ſuch as the *calamus aromaticus*, the birch which, in Spring, exhales a kind of odour of roſes, and the fir, the apple of which is ſweet ſcented. She has, in like manner, diffuſed colours the moſt agreeable, and the moſt brilliant, of flowers, on the moſt common of vegetables, ſuch as on the cones of the larch, which are of a beautiful violet, on the ſcarlet grains of the ſorb apple, on moſſes and muſhrooms, and even on turnip radiſhes.

On the ſubject of this laſt vegetable, hear what the accurate *Corneille le Bruyn* ſays, in his Voyage to Archangel:* "During our reſidence among them (the Samoiédes) they brought us ſeveral ſorts of turnips, of various

* Vol. iii. page 21.

" colours, and extremely beautiful. Some of them were " violet coloured, like our plumbs, gray, white, yellowiſh, " all of them ſtreaked with red, like vermillion, or the " fineſt laca, and as grateful to the eye as a pink. I painted " ſome of them on paper in water colours, and ſent ſome " to Holland, in a box filled with dry ſand, to one of my " friends, who is fond of ſuch curioſities. I carried thoſe " which I had painted to Archangel, where no one would " believe they were copied after Nature, till I produced " the turnips themſelves : A proof that no great attention " is paid there, to the rareſt and moſt curious produc- " tions of Nature."

I take theſe turnips to be of the radiſh ſort, the bulb of which grows above ground. At leaſt I preſume ſo, from the drawing itſelf of *Corneille le Bruyn*, and from having ſeen ſuch in Finland ; they are in taſte ſuperior to that of our colewort, and have a flavour ſimilar to the artichoke bottom. I have produced theſe teſtimonies of a Painter, and that Painter a Dutchman, reſpecting the beauty of theſe coloured vegetables, to correct the prejudice with which ſo many are hurried away, that in the Indies only the Sun gives a magnificent colouring to plants. But nothing, in my opinion, equals the beautiful green of the plants of the North, in Spring. I have frequently admired, in particular, that of the birch, of the turf, and of the moſſes, ſome of which are glazed with violet and purple. The ſolemn firs themſelves, then burſt into feſtoons of the moſt delicate green ; and when they come to throw, from the extremity of their branches, the yellow tufts of ſtamina, they appear like vaſt pyramids, loaded all over with little lamps.

We encountered no obſtacle in traverſing their foreſts. Sometimes there lay in the way an aged birch, laid low by the hand of Time, and internally conſumed by the worm; but in ſtepping on the rind, it ſupports you like a piece of thick leather. The wood of theſe birches decays very faſt, and their bark, which no humidity is able to corrupt, is

carried away, on the melting of the ſnows, into the lakes, where it ſwims about all in one piece. As to the firs, when they fall, humidity and the moſſes conſume them in a very little time. This country is interſected with great lakes, which every where preſent new means of communication, as they penetrate far into the land by their branching gulfs, and exhibit a new ſpecies of beauty, by reflecting, in their ſtill waters, the openings of the valleys, the moſſy hills, and the pendent firs bending from the promontories over their ſhores.

It would be no eaſy matter to deſcribe the hoſpitable reception which we found in the ſolitary manſions of theſe northern regions. Their maſters exerted themſelves in every poſſible way, to detain us among them for many days together. They ſent to the diſtance of ten, of fifteen leagues, invitations to their friends and relations, to come and aſſiſt them to entertain us. The days and the nights paſſed away in dancing and feſtivity. In the cities, the principal inhabitants regaled us by turns. Amidſt this hoſpitable conviviality, we made the tour of the cities of poor Finland, Wiburg, Villemanſtrand, Frederickſham, Niſlot, &c. The caſtle of this laſt town is ſituated on a rock at the diſcharge of lake Kiemen, which ſurrounds it with two cataracts. From its platforms you perceive the vaſt extent of that lake. We dined in one of its four towers, in a ſmall apartment illuminated by windows like gun ports. It is the very apartment in which the unfortunate *Ivan* was ſo long confined, who deſcended from the Throne of the Ruſſian Empire, at the age of two years and a half. But this is not the place to expatiate on the influence which moral ideas may diffuſe over Landſcapes.

Plants, then, are not ſcattered about at random over the Earth; and though nothing has been hitherto ſaid reſpecting their general arrangement in different Climates, this ſimple ſketch is ſufficient to demonſtrate, that there is order in their combination. If we examine, in like

manner, however ſuperficially, their expanſion, their attitude, their magnitude and proportions, we ſhall find that there is as much harmony in the aggregation of their parts, as in that of their ſpecies. It is impoſſible, in any one reſpect, to conſider them as mere mechanical productions of heat and cold, of dryneſs and humidity. Our ſcientific Syſtems have brought us back preciſely to the opinions which precipitated barbarous Nations into idolatry, as if it were neceſſary that the perfection of our illumination ſhould be the recommencement and return of our darkneſs; conformably to the well grounded cenſure of the Author of the Book of Wiſdom: *Aut ignem, aut ſpiritum, aut citatum aërem, aut gyrum ſtellarum, aut nimiam aquam, aut ſolem & lunam, rectores orbis terrarum Deos putaverunt*:* "They could not out of the good "things that are ſeen, know him that is; neither, by "conſidering the works, did they acknowledge the Work "Maſter: But deemed either fire, or wind, or ſwift air, "or the circle of the ſtars, or the violent water, or the "lights of Heaven, to be the Gods which govern the "world."

All theſe phyſical cauſes, united, could not have determined the port of one ſingle moſs. In order to be convinced of this, let us begin with examining the circulation of plants. It has been laid down as an indubitable principle, that their ſaps aſcend through the wood, and redeſcend through the rind. To the experiments which have been detailed in proof, I ſhall oppoſe only the inſtance of a great cheſnut tree, in the garden of the Thuilleries, near the terrace of the Feuillants, which, for twenty years paſt, has had no bark round its under part, and which, notwithſtanding, is in perfect vigor. Many elms on the Boulevards are in the ſame ſtate. On the other hand, we have ſeen old hollowed willows, which have not a bit of good wood left. Beſides, how is it poſſible to apply this

* Wiſdom of Solomon, chap. xiii. ver. 2.

principle of vegetation to a multitude of plants, ſome of which are compoſed entirely of tubes, and to others which have no rind, being encloſed only in dry pellicles?

Neither is there more truth in the ſuppoſition that they riſe in a perpendicular line, and that to this direction they are determined by the action of columns of air. Some, it muſt be allowed, do follow this direction, as the fir, the ſtalk of corn, the reed. But a much greater number deviate from it, ſuch as creeping plants of every ſpecies, vines, liannes, French beans, &c.....Others aſcend vertically, and having arrived at a certain height, in an air perfectly unobſtructed, fork off in various tiers, and ſend out their branches horizontally, as the apple tree; or incline them toward the earth, like firs; or hollow them in form of a cup, like the ſaſſafras; or round them into a muſhroom's head, like the pine; or ſtraighten them into a pyramid, like the poplar; or roll them as wool on the diſtaff, like the cypreſs; or let them float at the diſcretion of the winds, like the birch.

All theſe attitudes may be ſeen under the ſame bearing of the wind. Nay, there are ſome which aſſume forms, that all the art of the gardener could hardly impreſs upon them. Such is the badamier of the Indies, which grows up into the form of a pyramid, and carries it divided into ſtories, like the king of the cheſs board. There are plants uncommonly vigorous, which, far from purſuing the vertical line, recede from it the very moment that they get above ground. Such is the falſe potatoe of India, which loves to crawl along the ſand of the ſhores, in hot countries, covering whole acres in its progreſs. Such, too, is the ratan of China, which frequently grows in ſimilar ſituations. Theſe plants do not crawl from weakneſs. The ſcions of the ratan are ſo ſtrong, that the Chineſe make cordage of them for their ſhipping; and when they are on the ground, they ſerve as a trap for the deer, who find it impoſſible, with all their force, to diſengage themſelves. They are nets ſpread out by the hand of Nature.

I ſhould never have done were I to run over, ever ſo haſtily, the different ports of vegetables; what I have ſaid is evidence ſufficient, that there is not a ſingle one whoſe direction is determined by the vertical column of the air. This error has gained currency, from its being taken for granted that plants affected the greateſt volume of air; and this error in Phyſics has produced another in Geometry; for, on this ſuppoſition, they muſt all precipitate themſelves to the Horizon, becauſe there the column of air is much more conſiderable than in the Zenith. We muſt, in like manner, reject the conſequences which have been deduced from it, and laid down, as principles of Juriſprudence for the diviſion of lands in our boaſted mathematical treatiſes; ſuch is the following, *That no more wood, or corn, or graſs, can grow on the declivities of a mountain, than what would grow on the area of its baſis.* There is not a woodcutter, nor haymaker, in the world, who could not demonſtrate the contrary from his experience.

Plants, it has been ſaid, are mechanical bodies. Well then, try to conſtruct a body ſo ſlim, ſo tender, ſo fragile, as that of a leaf, which ſhall for whole years reſiſt the winds, the rains, the keeneſt froſt, the moſt ardent Sun. A ſpirit of life, independent of all Latitudes, governs plants, preſerves them, reproduces them. They repair the injuries which they may have ſuſtained, and ſkin over their wounds with a new rind. The pyramids of Egypt are crumbled into powder; but the graſſes which cloathed the ſoil, while the Pharaohs filled the throne, ſubſiſt to this day. How many Greek and Roman ſepulchral monuments, the ſtones of which were rivetted with iron, have, one after another, diſappeared! Nothing remains around their ruins, except the cypreſſes which ſhaded them.

It is the Sun, ſay they, who gives exiſtence to vegetables, and who maintains that exiſtence. But that great agent of Nature, all powerful as he is, muſt not be conſid-

ered as the only and determining cauſe even of their expanſion. If his heat invites moſt of thoſe of our Climates to open their flowers, it obliges others to ſhut them. Such are of this laſt deſcription, the great nightſhade of Peru, and the *arbor triſtis* (the ſad tree) of the Moluccas, which flower only in the night time. Nay, his remoteneſs from our Hemiſphere does not deſtroy in it the power of Nature. At that ſeaſon vegetate moſt of the moſſes which clothe the rocks with an emerald coloured green; and then the trunks of trees cover themſelves, in humid ſituations, with plants imperceptible to the naked eye, called *Mnium* and *Lichen*, which give them the appearance, in froſty weather, of columns of green bronze. Theſe vegetations, in the very ſeverity of Winter, overturn all our reaſonings, reſpecting the univerſal effects of heat, as plants, of an organization ſo extremely delicate, ſeem to need, in order to their expanſion, a temperature the moſt gentle.

Again, the fall of the leaf itſelf, which we have been taught to conſider as an effect of the Sun's abſence, is not occaſioned by the cold. If the palm retains its foliage, all the year round, in the South, the fir is equally an evergreen in the North. The birch, it is true, the larch, and ſeveral other ſpecies of trees, ſhed their leaves in northern Climates, on the approach of Winter; but a ſimilar depredation is likewiſe made on other trees, to the Southward. It is the reſinous ſubſtance, we are told, which preſerves the foliage of the fir in the North: But the larch, which is likewiſe a reſinous plant, is ſtripped of its verdure in Winter; whereas the filaria, the ivy, the privet, and many other ſpecies, which are not reſinous, continue with us, in full verdure, at all ſeaſons.

Without having recourſe to mechanical cauſes, the effects of which always contradict themſelves, whenever you attempt to generalize them, Why not recognize, in theſe varieties of vegetation, the ſteady and uniform direction of a Providence? That Providence has aſſigned to the

South, trees always green, and has clothed them with a broad foliage, to ſhelter the animal creation from the heat. In another reſpect, likewiſe, have the animals of hot climates been tenderly cared for, in being provided with clothing denuded of hair, conſequently, light and cool; and in having their habitations garniſhed with green ferns and liannes, ever freſh and ever comfortable. Neither has bountiful Nature neglected the animals of the North. She has ſpread as a roof over their heads, the ever green firs, whoſe lofty and tufted pyramids ward off the ſnow from their roots, and whoſe branches are ſo well furniſhed with long gray moſſes, that the trunk is rendered almoſt inviſible; for a bed, ſhe has accumulated a bank of moſs on the ground, in many places more than a foot in thickneſs; and the ſoft and dry leaves of many trees, which fall preciſely at the approach of the inclement ſeaſon: Finally, their proviſion too, is laid up in ſtore, namely, the fruits of thoſe very trees, which have then arrived at full maturity. To theſe ſhe has added, here and there, the ſcarlet cluſters of the ſorb apple, which, ſparkling afar over the whiteneſs of the ſnows, invite the birds to an aſylum; ſo that the partridge, the moorcock, every ſpecies of ſnow bird, the hare, the ſquirrel, frequently find, under the ſhelter of the ſame fir, a lodging, food and the means of warmth.

But one of the greateſt bleſſings of Providence to the animals of the North, is, the clothing of them with furred garments of long and thick hair, which regularly grow in Winter, and fall off in Summer. Naturaliſts, who conſider the hair of animals as a ſpecies of vegetation, are at pains to account for this growth and decay, from the influence of heat. They pretend to ſupport their ſyſtem by the inſtance of the human hair and beard, which grow rapidly in Summer. But I would aſk them, how it comes to paſs that, in cold countries, horſes which, in Summer, are ſleek and ſmooth, aſſume, in Winter, a long and ſhaggy coat, like the fleece of a ſheep? To this they reply,

It is the internal heat of their body, increaſed by the external action of the cold, which produces this wonderful phenomenon.

This is all very well. But I am under the neceſſity of objecting, that cold does not produce this effect on the human beard and hair, for it retards their growth; that, beſides, in the caſe of animals on which Providence beſtows a clothing peculiarly warm, the hair is much longer and thicker on thoſe parts of their body that have the leaſt natural heat, ſuch as the tail, which is very buſhy in horſes, martens, foxes and wolves; that this hair is ſhort and thin on the parts which have moſt natural heat, as the belly. Their backs, their ears, and frequently their very paws, are the parts moſt amply furniſhed with hair. But I ſatisfy myſelf with merely propoſing this laſt objection; the external and internal heat of an African lion ought, ſurely, to be, at leaſt, as ardent as that of a Siberian wolf; Whence is it, then, that the firſt is ſmooth, as if newly ſhaven, whereas the other is ſhagged up to the eyes?

The cold, which we have been taught to conſider as one of the greateſt obſtacles of vegetation, is as neceſſary to certain plants as heat is to others. If thoſe of the South could not thrive in the North, thoſe of the North would not ſucceed better in the South. The Dutch have made many a vain attempt to make the fir grow at the Cape of Good Hope, in order to find a ſupply of ſhip maſts, which ſell at a very high price in India. Many planters, in the Iſle of France, have made attempts, equally fruitleſs, to raiſe in that iſland the lavender, the daiſy, the violet, and other plants of our temperate climates. Alexander, who tranſplanted whole nations at his pleaſure, could not, with all his efforts, make the ivy of Greece grow in the vicinity of Babylon,* though he was very ambitious of acting, in India, the character of Bacchus in complete ſtyle.

* See Plutarch and Pliny.

I am perſuaded, however, that it might be poſſible to ſucceed in effecting theſe vegetable tranſmigrations, by employing ice, in the South, for the propagation of northern plants as we employ ſtoves, in the North, in the propagation of the plants of hot Climates. I do not believe there is a ſingle ſpot on the Globe, in which we could not, with a little addreſs and induſtry, procure ice, as eaſily as we can procure ſalt. In the whole courſe of my travels, I have never met with a temperature more ſultry than that of the Iſland of Malta, though I have twice croſſed the Line, and have paſſed a conſiderable part of my life in the Iſle of France, where the Sun is vertical twice a year. The ſoil of Malta conſiſts of little hills of white ſtone, which reflect the rays of the Sun with ſo much force, that the eyeſight is ſenſibly affected by it; and when the wind from Africa, known by the name of *Syroco*, which iſſues from the ſands of Zara, on its way to melt the ices of the North, comes to paſs over that Iſle, the air is as hot as the breath of an oven. I recollect, at that ſeaſon, a figure of Neptune in bronze, on the ſea ſhore, the metal of which was heated to ſuch a degree, that you could ſcarcely apply your hand to it. They, however, imported into the iſland ſnow from Mount Etna, which is ſixty leagues diſtant; they kept it for months together, laid on ſtraw in vaults, and it was to be bought for a farthing a pound weight, even when farmed out. Since, then, it is poſſible to have ice in Malta, during the Dog Days, I think it might be procured in every country of the Globe. Nature, beſides, as we have ſeen, multiplies icy mountains in the vicinity of hot countries. I may, perhaps, be here reproached with indicating the means of promoting the increaſe of luxury; but as the commonalty now live only on the luxury of the rich, my ſuggeſtion may tend to promote, at leaſt, the extenſion of the ſcience of Nature.

So far is cold from being the enemy of all plants, that it is in the North we find foreſts of the talleſt growth, and

of the greateſt extent in the World. It is only at the foot of the eternal ſnows of Mount Lebanon, that the cedar, the king of vegetables, riſes in all his majeſty. The fir, which is, next to him, the greateſt tree of our foreſts, arrives at a prodigious ſize only on icy mountains, and in the cold climates of Norway and Ruſſia. Pliny tells us, that the largeſt piece of timber which had ever been ſeen at Rome, up to his time, was a vaſt log of fir, a hundred and twenty feet long, and two feet ſquare at both ends, which Tiberius had conveyed from the cold mountains of Voltolino, in Piedmont, and which Nero employed in his amphitheatre. You may judge, ſays he, what muſt have been the length of the tree as it grew when a cutting of it had ſuch dimenſions. However, as I believe that Pliny means Roman feet, which are of the ſame dimenſion with thoſe of the Rhine, we muſt ſubtract from this meaſurement about a twelfth part nearly. He quotes, beſides, the fir maſt of the veſſel which brought from Egypt the obeliſk that Caligula ordered to be ſet up in the Vatican; this maſt was four fathoms in circumference. I know not where it might have grown. But I myſelf have ſeen firs in Ruſſia, compared to which thoſe of our temperate climates are mere twigs. Among others I remember to have ſeen, between Peterſburg and Moſcow, two logs which exceeded in ſize the largeſt of our maſt for ſhips of war, though theſe conſiſt of ſeveral pieces. They were cut from the ſame tree, and ſerved as mounting blocks at the gate of a peaſant's farm yard. The boats which convey proviſions from Lake Ladoga to Peterſburg are not much ſmaller than thoſe which ply between Rouen and Paris. They are conſtructed of fir planks from two to three inches thick, ſometimes two feet broad, and whoſe length is that of the whole barge. The Ruſſian carpenters of the cantons where they are built, make only a ſingle plank out of one tree, timber being in ſuch plenty there, that they do not take the trouble to ſaw it.

Before I had travelled into northern countries, I took it for granted, in conformity to the laws of our Phyſics, that the earth muſt there be ſtripped of every thing like vegetation, by the rigor of the cold. I was very much aſtoniſhed to find there the largeſt trees I had ever ſeen in my life, and growing ſo near each other, that a ſquirrel could eaſily ſcamper over great part of Ruſſia, without touching the ground, by ſpringing from branch to branch. This vaſt foreſt of fir covers Finland, Ingria, Eſtonia, the whole ſpace comprehended between Peterſburg and Moſcow, and thence extends over a great part of Poland, where oaks begin to appear, as I know from actual obſervation, having travelled through theſe countries. But what I have ſeen is a very ſmall part only of theſe immenſe foreſts, for it is well known that they extend from Norway all the way to Kamſchatka, ſome ſandy deſerts excepted; and from Breſlau to the ſhores of the Frozen Ocean.

I ſhall conclude this article with refuting an error alluded to in the preceding Study; namely, that cold is diminiſhed in the North, in proportion as the foreſts are cut down. As this poſition has been advanced by ſome of our moſt celebrated Writers, and afterwards retailed, as the cuſtom is, by a multitude of others; it is of importance to overturn it, as being highly prejudicial to rural economy. I had long adopted it as inconteſtably certain, on the faith of Hiſtory; but I was at length cured of my miſtake, not, however, by books, but by ſimple peaſants.

One day in Summer, about two o'clock after noon, being about to croſs the foreſt of Ivry, I ſaw ſome ſhepherds with their flocks, who kept at a conſiderable diſtance from it, repoſing under the ſhade of ſome trees that were ſcattered up and down through the country. I aſked them, Why they did not go, with their flocks, to take ſhelter in the foreſt, from the heat of the Sun.? They told me it was too hot there at that time of the day, and that they never drove their ſheep thither, except in the morning and evening. Being deſirous, however, of traverſing,

in broad day, the woods in which *Henry* IV, had hunted, and of arriving betimes at Anet, to take a view of the country palace of *Henry* II, and of the tomb of *Diana* of Poitiers, his miſtreſs, I engaged a lad belonging to one of the ſhepherds to attend me as a guide, which was a very eaſy matter to him, for the great road leading to Anet croſſes the foreſt in a ſtraight line; and it is, on that ſide ſo little frequented, that I found it covered in many places, with tufts of graſs and ſtrawberry plants. I felt all the way, as I walked along, a ſtifling heat, and much more ardent than was at that hour felt in the open country. I did not begin to reſpire freely, till I had got fairly clear of it, and had made my eſcape from the edge of the foreſt more than the diſtance of three muſket ſhot. In other reſpects, thoſe ſhepherds, that ſolitude, that ſilence of the woods, blended with the recollection of *Henry* IV, appeared to me much more affecting and ſublime, than the emblems of the chace in bronze, and the cyphers of *Henry* II, interwoven with the creſcents of Diana, which embelliſh, on all ſides, the domes of the Caſtle of Anet. This royal reſidence, loaded with ancient trophies of love, inſpired, at firſt, a mixed emotion of pleaſure and melancholy, which gradually ſubſided into profound ſorrow, on recollecting that this love was illicit; but this was followed, at laſt, by ſentiments of veneration and reſpect, which took complete poſſeſſion of my mind, on being informed that, by one of thoſe revolutions to which the monuments of men are ſo frequently ſubjected, the caſtle was then inhabited by the virtuous Duke of *Penthièvre*.

I have ſince reflected on what the ſhepherds told me, reſpecting the heat of the woods, and on what I myſelf had experienced; and I have, in fact, remarked that, in the Spring, all plants are more forward in the vicinity of woods, and that you find violets in flower on their borders much earlier than you gather them on the open plain, or on a naked hill. Foreſts, then, ſhelter the land from

cold, in the North; but what is equally wonderful, they ſhelter it likewiſe from the heat in warm countries. Theſe two oppoſite effects are produced entirely from the different forms and diſpoſition of their leaves. In the North, thoſe of the fir, the larch, the pine, the cedar, the juniper, are ſmall, gloſſy and varniſhed; their delicacy, their varniſh, and the endleſs variety of their direction, reflect the heat around them a thouſand different ways: They produce nearly the ſame effects as the hair of the animals of the North, whoſe furs are warm in proportion as the hair is fine and gloſſy. Beſides, the leaves of ſome ſpecies, as of the fir and of the birch, are perpendicularly ſuſpended from the branches, by long moveable membranes, ſo that with every breath of the wind they reflect all around the rays of the Sun, like ſo many mirrors.

In the South, on the contrary, the palms, the tallipot, the cocoa, the banana, bear large leaves, which, on the ſide next the ground, are rather rough than gloſſy, and which, ſpreading horizontally, form a deep ſhade below, where there is not the leaſt reflection of heat. I admit, at the ſame time, that the clearing away of foreſts diſpels the coldneſs occaſioned by humidity; but it increaſes the dry and ſharp colds of the North, as has been found on the lofty mountains of Norway, which were formerly cultivated, but are now uninhabitable, becauſe they are completely ſtripped of their woods.

This clearing of the ground likewiſe increaſes the heat in warm countries, as I have had occaſion to obſerve in the Iſle of France, on ſeveral parts of the coaſt, which are become ſo parched, ſince every ſpecies of tree has been ſwept away, that they are at this day abſolutely uncultivated. The very graſs which puſhes away during the rainy ſeaſon, is in a ſhort time quite burnt up by the Sun. What is ſtill worſe, there reſults from this parchedneſs of the coaſts, the drying up of a great many rivulets; for the trees, planted on the heights, attract thither the humidity of the air, and fix it there, as we ſhall ſee in

the Study on Plants. Beſides, by deſtroying the trees which are on the high grounds, you rob the valleys of their natural manure, and the plains of the palliſades which ſhelter them from the high winds. Theſe winds deſolate, to ſuch a degree the cultivation in many places, that nothing can be made to grow. I aſcribe to this laſt piece of miſmanagement the ſterility of the heaths in Brittany. In vain has the attempt been made to reſtore their ancient fertility: It never can ſucceed, till you begin with recalling their ſhelter and their temperature, by reſowing the foreſts. But there is a requiſite prior even to this; you muſt render the peaſantry happy. The proſperity of a country depends, before, and above all things, on that of its inhabitants.

STUDY FIFTH.

REPLY TO OBJECTIONS AGAINST PROVIDENCE, FOUNDED ON THE DISORDERS OF THE ANIMAL KINGDOM.

WE ſhall continue to diſplay the fecundity of Northern Regions, in order to overturn the prejudice, which would aſcribe this principle of life, in plants and animals, only to the heat of the South. I could expatiate on the numerous and extenſive chaſes of elks, rain deer, water fowls, heath cock, hares, white bears, wolves, foxes, martens, ermines, beavers, &c. which the inhabitants of the northern diſtricts annually carry on, the very peltry of which, above what they employ for their own uſe, ſupplies them with a very conſiderable branch of commerce for the markets of all Europe. But I ſhall confine myſelf entirely to their fiſheries, becauſe theſe precious gifts of the Waters are preſented to all Nations, and are no where ſo abundant as in the North.

From the rivers and lakes of the North are extracted incredible multitudes of fiſhes. *John Schæffer*, the accurate Hiſtorian of Lapland, tells us,* that they catch annually at Torneo, no leſs than thirteen hundred boat loads of ſalmon; that the pike there grow to ſuch a ſize, that ſome are found as long as a man, and that every year they

* Hiſtory of Lapland, by *John Schæffer*.

ſalt as many as are ſufficient for the ſupport of four kingdoms of the North. But theſe fiſheries, however productive, fall far ſhort of thoſe of the Seas.* From the boſom of theſe is dragged the enormous whale, which is uſually about ſixty feet in length, twenty feet broad over the body and at the tail, eighteen feet high, and which yields up to a hundred and thirty barrels of oil. The fat is two feet thick, and in cutting it off, they are under the neceſſity of uſing great knives, ſix feet long.

From the Seas of the North, annually take their departure innumerable ſhoals of fiſhes, which enrich the fiſhers of all Europe; ſuch as cod, anchovies, ſturgeon, dory, mackerel, pilchers, herrings, ſea dogs, belugas, ſea calfs, porpoiſes, ſea horſe, puffers, ſea unicorns, ſaw fiſh, &c..... The ſize of them all is conſiderably larger than in temperate Latitudes, and they are divided into much more numerous ſpecies. There are computed as high as twelve ſpecies of the whale tribe; and plaice are caught in thoſe ſeas of the enormous weight of four hundred pounds. But I ſhall farther confine myſelf to thoſe fiſhes which are beſt known to us, herrings, for example. It is an inconteſtable fact, that the Seas of the North every year ſend out a quantity more than ſufficient to feed all the inhabitants of Europe.

We are in poſſeſſion of Memoirs which prove, that the herring fiſhery was carried on ſo far back as the year 1163, in the Straits of Sunda, between the Iſlands of Schonon and Seeland. *Philip de Méſières*, Governor to *Charles* VI, relates, in the *Old Pilgrim's Dream*, that in the year 1389, during the months of September and October, the quantity of herrings in thoſe Straits was ſo prodigious, that, "For ſeveral leagues together you might," ſays he, "have cut them with a ſword; and it is credibly reported, that there are forty thouſand boats which are employed in nothing elſe, for two months, but in catching

* Conſult *Frederic Martens* of Hamburg.

" herrings; each boat containing, at leaſt, ſix perſons, " and many not leſs than ten; and beſides theſe, there " are five hundred great and ſmall veſſels of burden, em- " ployed wholly in picking, ſalting, and barrelling up the " herrings." He makes the number of perſons engaged in this fiſhery amount to three hundred thouſand, Pruſſians and Germans.

In 1610, the Dutch, who carry on the herring fiſhery ſtill farther to the North, where the fiſh is better, employed in it three thouſand boats, fifty thouſand fiſhermen without reckoning nine thouſand other veſſels employed in barrelling, and conveying them to Holland, and a hundred and fifty thouſand perſons, partly at ſea, partly on ſhore, engaged in the carrying trade, in preparing and ſelling. At that period they derived a revenue from it, of two millions, ſix hundred and fifty thouſand pounds ſterling. I myſelf have witneſſed in Amſterdam, in 1762, the joy of the populace, expreſſed by diſplaying ſtreamers and flags over the ſhops where that fiſh was expoſed to ſale, on the firſt arrivals; and in every ſtreet this was the caſe. I have been informed in that city, that the Company eſtabliſhed for carrying on the herring fiſhery was richer, and fed more mouths, than the Eaſt India Company. The Danes, the Norwegians, the Swedes, the Hamburgers, the Engliſh, the Iriſh, and ſome traders of the ports of France, particularly of Dieppe, fitted out veſſels for this fiſhery, but in too ſmall a number for a fall of manna ſo plentiful and ſo eaſily gathered.

In 1782, at the mouth of the Gothela, a ſmall river which waſhes the walls of Gottenburg, one hundred and thirtynine thouſand barrels were cured by ſalt, three thouſand ſeven hundred were ſmoked, and two thouſand eight hundred and fortyfive caſks of oil were extracted from what could not be preſerved. The Gazette of France,* which contains an account of this fiſhery, re-

* Friday the 11th October, 1782.

marks that, previous to 1752, these fishes had entirely disappeared for 72 years together. I ascribe their desertion of this coast to some naval engagement, which had chased them away by the noise of the artillery, as is the case with the turtle of the island of Ascension, which forsake the road for weeks together, when vessels passing that way discharge their great guns. It may, perhaps, be likewise accounted for, from a conflagration of the forests, which might have destroyed the vegetables that attracted them to the coast.

The good Bishop of Berghen, *Pont Oppidan*, the *Fenelon* of Norway, who introduced into his popular sermons, complete tracts of Natural History, as being excellent articles of Theology, relates,* that when the herrings coasted along the shores of Norway, "The whales, "which pursue them in great numbers, and which dart "their water spouts into the air, give to the Sea, at a "distance, the appearance of being covered over with "smoking chimnies. The herrings, in order to elude "the pursuit, throw themselves close inshore into every "little bay and creek, where the water, before tranquil, "forms considerable swellings and surges, wherever they "croud to make their escape. They branch off in such "quantities, that you may take them out in baskets full, "and the country people can even catch them by the "hand." After all, however, that the united efforts of all these fishers can effect, hardly any impression is made on their great general column, which coasts along Germany, France, Spain, and stretches as far as the Straits of Gibraltar; devoured, the whole length of their passage, by an innumerable multitude of other fishes, and sea fowls, which follow them night and day, till the column is lost on the shores of Africa, or returns, as other Authors tell us, to the Climates of the North.

* *Pont Oppidan's* Natural History of Norway.

For my own part, I no more believe that herrings return to the Seas from which they came, than that fruits reaſcend the trees from which they have once dropped. Nature is ſo magnificent in the entertainments which ſhe provides for Man, that ſhe never ſerves up the ſame diſhes a ſecond time. I preſume, conformably to an obſervation of Father *Lamberti*, a miſſionary in Mingrelia, that theſe fiſhes accompliſh the circuit of Europe by going up the Mediterranean, and that the extreme boundary of their emigration is the extremity of the Black Sea; and this is the more probable, that the pilchers, which take their departure from the ſame places, follow the ſame track, as is proved by the copious fiſheries of them carried on along the coaſts of Provence and Italy. "Many herrings," ſays Father *Lamberti*,* "are ſometimes ſeen in "the Black Sea; and in the years when this happens, "the inhabitants of the adjacent countries draw a flatter-"ing prognoſtic of a plentiful ſturgeon fiſhing ſeaſon; "and they deduce the oppoſite concluſion from the non-"appearance of herrings. There was ſeen in 1642 a "quantity ſo prodigious of them, that the Sea having "thrown them on the ſhallows which ſeparate Trebiſond "from the country of the Abcaſſes, the whole was cov-"ered and ſurrounded with a bank of herrings, which "was, at leaſt, three hand breadths high. The people of "the country were under dreadful apprehenſions, that "the air would be poiſoned by the corruption of theſe "fiſhes; but they were preſently followed by enormous "flocks of crows and rooks, which eat up the herrings, "and cured the honeſt folks of their terror. The natives "talk of a ſimilar appearance before that period, only the "quantity was much inferior."

This immenſe glut of herrings is undoubtedly, matter of aſtoniſhment; but how is that aſtoniſhment increaſed, when it is conſidered, that this column is not the half of

* Account of Mingrelia, Thevenot's Collection.

what annually iſſue from the Seas of the North! It ſeparates at the northern extremity of Iceland, and while one diviſion proceeds to diffuſe plenty over the ſhores of Europe, the other puſhes forward to convey ſimilar benefits to the ſhores of America. *Anderſon* informs us, herrings are in ſuch abundance on the coaſts of Iceland, that a ſhallop can with difficulty force its way through the ſhoal by dint of rowing. They are accompanied by an incredible multitude of pilchers and cod, which renders fiſh ſo plenty in the iſland, that the inhabitants have them dried, and reduced to meal with a grindſtone, to become food for their oxen and horſes.

Father *Rale*, a jeſuit, and an American miſſionary, ſpeaking of the Savages who inhabit between Acadia and Newengland, tells us,* "That they reſort, at a cer-"tain ſeaſon, to a river not far diſtant, where, for the "ſpace of a month, the fiſhes force their way upward in "ſuch quantities, that, with hands ſufficient, fifty thou-"ſand barrels might he filled in a ſingle day. Theſe are "a ſpecies of very large herrings, moſt agreeable to the "taſte when freſh. They are preſſed upon each other "to the thickneſs of a foot, and are taken out by pails "full, like water. The Savages dry them for eight or ten "days, and live on them during their whole feed time."

This teſtimony is confirmed by a great many others, and particularly by a Gentleman of Engliſh extraction, but a native of America, who has favoured us with a Hiſtory of Virginia. "In Spring," ſays he,† "herrings "puſh upwards, in ſuch quantities, along the rivulets and "fords of rivers, that it is almoſt impoſſible to paſs on "horſeback without trampling on thoſe fiſhes.....Hence "it comes to paſs, that at this ſeaſon of the year, thoſe "parts of the rivers where the water is freſh, are render-"ed fetid by the fiſh which they contain. Beſides her-

* Inſtructive Letters, Vol. xxiii. page 199.

† Hiſtory of Virginia, page 202.

" rings, may be ſeen an infinite number of ſhads, roach, " ſturgeon, and a few lampreys, which find their way " from the Sea up the rivers."

It would appear, that another column of thoſe fiſhes iſſues from the North Pole, to the eaſtward of our Continent, and paſſes through the channel which ſeparates America from Aſia, for we are informed, by a miſſionary, that the inhabitants of the land of Yaſſo go to Japan, to ſell, among other dried fiſhes,* herrings alſo. The Spaniards, who have been attempting diſcoveries to the north of California, find all the nations of thoſe regions to be fiſh eaters, and unacquainted with every kind of cultivation. Though they landed there only in the middle of Summer, before, perhaps, the fiſhing ſeaſon had commenced, they found pilchers in the greateſt abundance, the native country and emigrations of which are the ſame, for vaſt quantities of a ſmaller ſize, are taken at Archangel. I have eaten of them in Ruſſia, at the table of Mareſchal Count *Munich* who called them the anchovies of the North.

But as the Northern Seas, which ſeparate America from Aſia, are not much known to us, I ſhall purſue this fiſh no farther. I muſt, however, obſerve, that more than half of thoſe herrings are filled with eggs, and if the propagation were to go on, to its full extent, for three or four generations only, without interruption, the Ocean itſelf would be unable to contain them. It is obvious to the firſt glance of the eye, that the herring produces, at leaſt, as many eggs as the carp. M. *Petit*, a celebrated practitioner in Surgery and Medicine, has found, by experiment, that the two parcels of eggs, of a carp eighteen inches long, weighed eight ounces two drachms, which make four thouſand, ſeven hundred and fiftytwo grains; and that it required ſeventytwo of theſe eggs to make up the weight of one grain; which gives a product of three hun-

* Eccleſiaſtical Hiſtory of Japan, by Father *F. Soliar*. Book xix. chap. xi.

dred fortytwo thouſand, one hundred and fortyfour eggs, contained in one roe weighing eight ounces and two drachms.

I have been ſomewhat diffuſe on the ſubject of this particular ſpecies of fiſh, not in the view of promoting our commerce, which, by its offices, its bounties, its privileges, its excluſions, renders every article ſcarce with which it intermeddles, but in compaſſion to the poorer part of the community, reduced, in many places, to ſubſiſt entirely on bread, while Providence is beſtowing on Europe, in the richeſt profuſion, the moſt delicate fiſh, perhaps, that ſwims in the Sea.* We are not to form our judgment from thoſe that are brought to Paris, after the ſeaſon is over, and which are caught on our coaſts; but from thoſe which are caught far to the North, known, in Holland, by the name of *pickled herrings*, which are thick, large, fat, with the flavour of a nut, ſo delicate and juicy, that they melt away in the cooking, and are eaten raw from the pickle, as we do anchovies.

The South Pole is not leſs productive of fiſhes than the North. The Nations which are neareſt to it, ſuch as the inhabitants of the iſlands of Georgia, of New Zealand, of Maire's Strait, of the Terra del Fuego, of Magellan's Strait, live on fiſh, and practice huſbandry of no kind. That honeſt Navigator, Chevalier *Narbrught*, ſays, in his Journal of a Voyage to the South Seas, that Port Deſire, which lies in 47°. 48′ South Latitude, is ſo filled with pinguins, ſea calves, and ſea lions, that any veſſel touching there, may find proviſions in abundance. All theſe animals, which are there uncommonly fat, live entirely on fiſh. When he was in Magellan's Strait, he caught, at a ſingle draught of the net, more than five hundred large fiſhes, reſembling the mullet, as long as a man's legs; ſmelts twenty inches long; a great quantity of fiſh like the anchovy: In a word, they

* More than one epicure has already made this obſervation: But here is another, on which few are diſpoſed to dwell, it is this, that in all caſes, and in all countries, *the moſt common things are the beſt.*

found, of every ſort, ſuch an abundant profuſion, that they ate nothing elſe during their ſtay in thoſe parts. The beautiful mother of pearl ſhells, which enrich our cabinets, under the name of the Magellan oyſter, are there of a prodigious ſize, and excellent to eat. The lempit, in like manner, grows there to a prodigious magnitude. There muſt be, continues he, on theſe ſhores, an infinite number of fiſhes to ſupport the ſea calves, the pinguins, and the other fowls, which live ſolely on fiſh, and which are all equally fat, though their number is beyond computation. They one day killed four hundred ſea lions, in the ſpace of half an hour. Of theſe ſome were eighteen feet long. Thoſe which are only fourteen ſwarm by thouſands. Their fleſh is as tender and as white as lamb, and excellent food when freſh, but ſtill better when it has been ſome time in ſalt. On which I muſt make this obſervation, that the fiſh of cold countries only take in ſalt eaſily, and retain, in that ſtate, part of their flavour. It ſeems as if Nature intended thus to communicate to all the Nations of the Globe the abundance of the fiſheries which iſſue from the frigid Zones.

The weſtern coaſt of America, in that ſame Latitude, is not leſs amply ſupplied with fiſh. "Along the whole ſea "coaſt," ſays the Peruvian *Garcillaſo de la Vega*,* "from "Aréquipa to Tarapaca, a track of more than two hun- "dred leagues in length, they employ no other manure "to dung the land, except the excrement of certain fowls, "called ſea ſparrows, of which there are flocks ſo nu- "merous, as to exceed all belief. They inhabit the deſ- "ert iſlands on the coaſt, and by the accumulation of "their ordure, they whiten them to ſuch a degree, that, "at ſome diſtance, they might be taken for mountains "covered with ſnow. The Incas reſerved to themſelves "the right of diſpoſing of thoſe iſlands, as a royal boon "to ſuch and ſuch a favourite province." Now this dung

* Hiſtory of the Incas, book v. chap. iii.

was entirely the produce of the fiſhes on which thoſe fowls conſtantly fed.

" In other countries, on the ſame coaſt," ſays he,* " ſuch as that of Atica, of Atitipa, of Villacori, of Mal- " la and Chilca, they dung the land with the heads of " pilchers, which they ſow there in great quantities. " They put them in the ground at ſmall intervals from " each other, along with two or three grains of maize. " At a particular ſeaſon of the year, the Sea throws upon " the ſhore ſuch quantities of live pilchers, that they " have an abundant ſupply for food, and for manure, and " this to ſuch a degree, that after theſe demands were ſat- " isfied, they could eaſily load whole ſhips with the o- " verplus."

It is obvious that the coaſt of Peru is nearly the boundary of the emigration of the pilchers which ſet out from the South Pole, as the coaſts of the Black Sea are the boundary of that of the herrings which iſſue from the North Pole. The continuation and direction of theſe two bands, the pilchers of the South, and the herrings of the North, are nearly of the ſame length, and their deſtinies are, at laſt, ſimilar. It would appear as if certain Nereïds were annually commiſſioned to conduct, from the Poles, thoſe innumerable ſwarms of fiſhes, to furniſh ſubſiſtence to the inhabitants of the temperate Zones; and that, having arrived at the termination of their courſe, in the hot Latitudes, where fruits are produced abundantly, they empty the gleanings of their nets upon the ſhore.

It will not be ſo eaſy a taſk, I confeſs, to refer to the beneficence of Nature the wars which animals wage with each other. Why ſhould beaſts of prey exiſt? Suppoſing me incapable of reſolving this difficulty, Nature muſt not be accuſed of cruelty becauſe I am deficient in mental ability. She has arranged what we do know, with ſuch conſummate wiſdom, that we are bound to give her credit

* Conſult the ſame Work.

for the ſame character of wiſdom, in caſes where we cannot find her out unto perfection. I will have the courage, however, to declare my opinion, and to offer a reply to this queſtion; and ſo much the rather, as it affords me an opportunity of preſenting ſome obſervations which I conſider as at leaſt new, if not worthy of attention.

Firſt of all, Beaſts of prey are neceſſary. What otherwiſe would become of the carcaſſes of ſo many animals, which periſh both on the land and in the water, and which they would, conſequently, poiſon with infection. Several ſpecies of carnivorous animals, it muſt be allowed, devour their prey while yet living. But who can tell whether, in this, they do not tranſgreſs the law of their nature? Man knows very little of his own Hiſtory. How is it poſſible he ſhould know that of the beaſts? Captain Cook obſerved, in a deſert iſland of the Southern Ocean, that the ſea lions, the ſea calves, the white bears, the ſots, the eagles, the vultures, lived in perfect concord, no one tribe giving the leaſt diſturbance to another. I have obſerved a ſimilar good agreement among the fool and the frigat of the Iſland of Aſcenſion. But, after all, we muſt not compliment them too highly on their moderation. It was merely an aſſociation of plunderers; they lived peaceably together, that they might devour, unmoleſted, their common prey, the fiſhes, which they all gulped down alive.

Let us revert to the great principle of Nature. She has made nothing in vain. She deſtines few animals to die of old age; nay, I believe, that ſhe permits Man alone to complete his career of life, becauſe his old age alone can be uſeful to his fellow creatures. To what purpoſe would ſerve, among the brute creation, grandſires deſtitute of reflection, to progeny brought into exiſtence in the maturity of their experience? On the other hand, what aſſiſtance could decrepit parents find among children, which abandon them, the inſtant they have learned to ſwim, fly, or walk? Old age would be to them a burthen from which they are delivered by the ferocious animals.

Beſides, from their unobſtructed generations would ariſe a poſterity without end, which the Globe is not ſufficient to contain. The preſervation of individuals would involve the extinction of ſpecies.

Animals might always live, I ſhall be told, in a proportion adapted to the places which they inhabit; but in that caſe they muſt ceaſe to multiply; and from that moment farewel the loves, the neſts, the alliances, the foreſight, and all the harmonies which ſubſiſt among them. Every thing that is born is doomed to die. But Nature, in devoting them to death, takes from them that which could render the inſtant of it cruel. It is uſually in the night time, and in the hour of ſleep, that they ſink under the fangs and the teeth of their deſtroyers. Twenty ſtrokes, ſent home in one inſtant to the ſources of life, afford no leiſure to reflect that they are going to looſe it. That fatal moment is not embittered to them, by any of the feelings which render it ſo painful to moſt of the Human Race, regret for the paſt, and ſolicitude about futurity. Their unanxious ſpirits vaniſh into the ſhades of night, in the midſt of a life of innocence, and frequently during the indulgence of the fond illuſions of love.

Unknown compenſations may, perhaps, farther ſweeten this laſt tranſition. I ſhall obſerve at leaſt, as a circumſtance deſerving the moſt attentive conſideration, that the animal ſpecies, whoſe life is ſacrificed to the ſupport of that of others, ſuch as that of inſects, do not appear poſſeſſed of any ſenſibility. If the leg of a fly happens to be torn away, ſhe goes and comes as if ſhe had loſt nothing; the cutting off a limb ſo conſiderable is followed by no fainting, or convulſion, or ſcream, or ſymptom of pain whatever. Cruel children amuſe themſelves with thruſting ſtraws into their anus; they riſe into the air thus empaled; they walk about, and perform all their uſual motions, without ſeeming to mind it. Others take lady birds, tear off a large limb, run a pin through the nerves and cartilages of the thigh, and attach them with a ſlip of paper

to a ſtick. Theſe unfeeling inſects fly humming round and round the ſtick, unweariedly, and without any appearance of ſuffering pain. *Reaumur* one day cut off the fleſhy and muſcular horn of a large caterpillar, which continued to feed as if no mutilation had taken place. Is it poſſible to think, that beings ſo tranquil in the hands of children and philoſophers, endure any feeling of pain when they are gobbled down in the air by the birds?

Theſe obſervations might eaſily be extended much farther: Particularly to that claſs of fiſhes, which have neither bone nor blood, and of theſe conſiſt the greateſt number of the inhabitants of the Seas, and they appear to be equally void of ſenſibility. I have ſeen, between the Tropics, a tunny, from the nape of whoſe neck one of the ſailors ſcooped out a large ſlice of the fleſh, with a ſtroke of the harpoon, which was forced backward to his head, who followed the ſhip for ſeveral weeks, and was outdone by no one of his companions, either in ſpeed or in friſkineſs. I have ſeen ſharks, after being ſtruck with muſket bullets, return to bite at the hook from which they had juſt before eſcaped, with their mangled throat.

We ſhall find, beſides, a greater analogy between fiſhes and inſects, if we conſider that neither have bones nor blood; that their fleſh is impregnated with a glutinous liquid, and which likewiſe appears to be the ſame in both, from its emitting the ſame odour when burnt; that they do not reſpire by the mouth, but by the ſides, inſects by the trachea, fiſhes by the gills; that they have no auditory organ, but hear by means of the nervous impreſſion made on their bodies by the commotion of the fluid element in which they live; that they ſee all round the horizon from the diſpoſition of their eyes; that they equally run to the light; that they diſcover the ſame avidity, and are, for the moſt part, carnivorous; that, in both genera, the female is larger than the male; that theſe throw out their eggs, to an infinite number, without ſitting on them: That moſt fiſhes paſs, on their birth, through the ſtate of

inſects, iſſuing from their eggs, in form of worms, and even ſome in that of frogs, ſuch as a ſpecies of fiſh in Surinam; that both are caſed in ſcales; that many fiſhes are provided with beards and horns, like inſects; that both the one and the other contain, in their categories, an incredible variety of forms, peculiar to themſelves; finally, that their conſtitutions, their metamorphoſes, their manners, their fecundity, being the ſame, there is a powerful temptation to aſcribe to theſe two numerous claſſes, the ſame inſenſibility.

As to animals which have blood, let *Mallebranche*, ſay what he pleaſes, they are ſenſible. They expreſs a ſenſe of pain by the ſame ſigns which we do. But Nature has fenced them with thick hides, with long hair, with a plumage, which protect them againſt external blows. Beſides, they are little, if at all, expoſed to cruel treatment, except from the hands of bad men.

Let us now proceed to conſider the generation of animals. We have ſeen that the greateſt and moſt numerous ſpecies of the Globe, in the animal and vegetable kingdoms, are produced in the North, independently of the heat of the Sun. Let us now enquire, whether the prolific power of fermentation be greater in the South. Certain Egyptians told Herodotus, that particular ſpecies of animals were formed of the fermented mires of the Ocean, and of the Nile. Whatever reſpect I have for the Ancients, I abſolutely reject their authority in Phyſics. Moſt of their Philoſophers have a ſufficiently ſtriking reſemblance to our own. They obſerved ſparingly, and reaſoned copiouſly. If ſome of them, in the view of ſpeaking peace to voluptuous Princes, have advanced that every thing proceeded from corruption, and returned to corruption again, others more honeſt and ſincere have refuted them, even in the earlieſt times.

It is not only certain, that corruption produces no one living body, but is fatal to all, eſpecially to thoſe which have blood, and chiefly to Man. No air is unwholeſome

but where there is corruption. How could such a principle have generated in animals, feet provided with toes, nails and claws; skins clothed with so many sorts of hair and plumage; jaws palisaded with teeth cut out into a form adapted, some for cutting, and others for grinding; heads adorned with eyes, and eyes furnished with lids to defend them from the Sun? How could the principle of corruption have collected these scattered members; unite them by nerves and muscles; support them by bony substances, fitted with pivots and hinges; feed them with veins filled with a blood which circulates, whether the animal be in motion or at rest; cover them with skins so admirably provided with hairy furs, precisely adapted to the Climates which they inhabit; afterwards, make them move by the combined action of a heart and a brain, and give to all these machines, produced in the same place, and formed of the same slime, appetites and instincts so entirely different? How could it have inspired them with the sensation of themselves, and kindled in them the desire of reproducing themselves by any other method than that which originally gave them existence?

Corruption, so far from conferring life on them, must have deprived them of it, for it generates tubercles, inflames the eyes, dissolves the blood, and produces an infinite number of diseases in most animals which respire its emanations.* The fermentation of any substance what-

* Of all corruptions, that of the human flesh is most noxious. Of this a very singular instance is related by *Garcillaso de la Vega*, in his History of the Civil Wars of the Spaniards, in the Indies. Vol. i. Part ii. Chap. xlii. He observes, first, that the Indians, of the Islands of Barlovento, poison their arrows, by plunging the points of them into dead bodies; and then adds, "I shall relate what I myself saw happen in the case of one of the "quarters of the dead body of Carvajal, which was exposed on the great "road to Collasuyu, to the south of Cusco. We set out a walking one "Sunday, ten or twelve school fellows of us, all mongrels, that is, the "progeny of Spanish men by Indian women, the oldest not above twelve "years of age. Having observed, as we went along in the open country, "one of the quarters of Carvajal's body, we took a fancy to go and look "at it, and having come up, we found it was one of his thighs, the fat of

ever could have formed no one animal, nor even the egg from which it iſſued. We find in the dunghills of our great towns, where ſo many ſubſtances ferment, organic

" which had dropped to the ground. The fleſh was greeniſh, and entirely " corrupted. While we were examining this mournful ſpectacle, a forward " boy chanced to ſay, I could wager no one here dares to touch it; an- " other replied, he would. At laſt the ſtouteſt of all, whoſe name was " Bartholomew Monedero, imagining he was going to perform an act of " courage, plunged the thumb of his right hand into this putrid limb, " which it eaſily penetrated. This bold action aſtoniſhed every one, to " ſuch a degree, that we all run away from him, for fear of infection, call- " ing out, O abominable! Carvajal will make you pay dear for this raſh- " neſs. He went, however, inſtantly to the brook, which was cloſe by " the ſpot, waſhed his hand ſeveral times, rubbing it over with clay, and " ſo returned home. Next day he returned to ſchool, where he ſhewed " us his thumb, which was ſwollen prodigiouſly; but towards evening the " whole hand had become inflamed up to the wriſt; and next day, which " was Tueſday, the arm had ſwelled up to the elbow, ſo that he was re- " duced to the neceſſity of diſcloſing the caſe to his father. Profeſſional " men were immediately called in, who had the arm tightly bandaged, a- " bove the ſwelling, and applied every remedy which art and experience " could ſuggeſt as a counter poiſon. After all, notwithſtanding, it nearly " coſt the patient his life; and he recovered not without ſuffering intolera- " ble pain, after having been for four months ſo enfeebled, as to be inca- " pable of holding the pen."

From this anecdote it may be concluded, how dangerous the putrid emanations from our church yards muſt be to the inhabitants of cities. Pariſh Churches in which ſo many corpſes are interred, become impregnated with an air ſo corrupted, eſpecially in Spring, when the ground begins to grow warm, that I conſider this as one of the chief ſources of the ſmall pox, and of the putrid fevers which are prevalent at that ſeaſon. An unfavoury ſmell then iſſues from it which makes the ſtomach riſe. I have felt this to an inſufferable degree in ſome of the principal Churches of Paris. This ſmell is extremely different from that produced by a croud of living people, for we are affected with no ſuch ſenſation in the Churches of Convents, where few only are interred.

It would be a curious ſubject of enquiry to Anatomiſts, Why the putrefaction of dead bodies ſhould deſtroy the animal economy of moſt beings, while it makes no derangement in that of carnivorous animals. Many ſpecies of inſects and fiſhes live on carrion. I remark that the greateſt part of theſe have no blood, which is the firſt fluid that corruption lays hold of, and that the apertures through which they breathe are not the ſame with thoſe by which they take in their food. But theſe reaſons, it muſt be allowed, are inapplicable to vultures, ravens, and other birds of prey.

particles of every ſpecies; entire bodies of animals, blood, plants, ſalts, oils, excrements, ſpirits, minerals, ſubſtances more heterogeneous, and more combined by Man in a ſtate of ſociety, than ever the waves of the Ocean accumulated and confounded on its ſhores: There was never found there, however, a ſingle organized body.

It muſt not be affirmed, that the heat neceſſary to their expanſion is there wanting, for it exiſts in every poſſible degree, from ice up to fire. Salts cryſtalize in them, and ſulphurs are formed. There was picked up in Paris itſelf, ſome years ago, ſulphur formed by Nature, in ancient dunghills of the time of *Charles* IX. We ſee, every day, that fermentation may be excited in dung to ſuch a degree, as to catch fire. Nay, its moderate heat is ſo favourable to the expanſion of germs, that it is employed for the hatching of chickens. But the combinations of all theſe ſubſtances never produced any thing living, or organized. What do I ſay? The firſt operations of Nature, which we wiſh to explain, are covered in ſo many myſteries, that an egg with an aperture ever ſo ſmall loſes its prolific power. The ſlighteſt contact with the exterior air, is ſufficient to extinguiſh in it the radical principles of life. It is neither matter, then, nor degrees of heat, which are wanting to Man, to imitate Nature in the pretended creation of beings; and this power, ever young and active, has by no means waſted itſelf, as it is always exerting itſelf in their reproduction; a diſplay of omnipotence equally wonderful with that of conferring exiſtence at the firſt.

The wiſdom with which ſhe has ſettled their proportions, is not leſs worthy of admiration. On a careful examination of animals, we ſhall find no one deficient in its members, regard being had to its manners, and the ſituation in which it is deſtined to live. The large and long bill of the toucan, and his tongue formed like a feather, were neceſſary to a bird who hunts for inſects, ſcattered about over the humid ſands of the American ſhores. It

was needful that he ſhould be provided, at once, with a long mattock wherewith to dig, with a large ſpoon to collect his food, and a tongue fringed with delicate nerves, to enjoy the reliſh of it. Long legs and a long neck were neceſſary to the heron, to the crane, to the flamingo, and other birds, which have to walk in marſhy places, and to ſeek their prey under the water. Every animal has feet, and a throat, or a bill, formed in a moſt wonderful manner, to ſuit the ſoil which they have to tread, and the food by which they are to be ſupported. From the different configurations of theſe, Naturaliſts derive the characters which diſtinguiſh beaſts of prey from ſuch as live on vegetable ſubſtances.

Theſe organs have never been wanting to the neceſſities of animals, and are themſelves indelible as their inſtincts. I have ſeen, up in the country, ducks brought up at a diſtance from water, for ſeveral generations, which, nevertheleſs, retained on their feet the broad membranes of their ſpecies, and which, on the approach of rain, clapped their wings, ſcreamed aloud, called upon the clouds, and ſeemed to complain to Heaven of the injuſtice of Man, who had baniſhed them from their element. No animal wants any one neceſſary member, or is encumbered with one that is ſuperfluous. Some philoſophers have conſidered the ſpurs appended to the heels of the hog as uſeleſs, becauſe they do not bear upon the ground; but this animal, deſtined to live in ſwampy places, where he delights to wallow, and to make, with his ſnout, deep trenches in the mire, would frequently ſink under the impulſe of gluttony, had not Nature placed above his heels two prominent excreſcences, which aſſiſt him in getting out again. The ox, who frequents the marſhy banks of rivers, is provided with nearly ſimilar weapons. The hippopotamus, who lives in the water, and upon the banks of the Nile, is furniſhed with a cloven foot, and, above the paſtern, with two ſmall horny ſubſtances, which bend backward as he walks, ſo that he leaves on the ſand an im-

preſſion, which ſeems to have been made by the preſſure of four paws. The deſcription of this amphibious animal may be ſeen toward the end of *Dampier*'s Voyages.

How was it poſſible for enlightened men to miſunderſtand the uſe of theſe acceſſory members, the form of which is imitated by ſome of our country clowns, in ſtilts; which, from this very reſemblance, they call *hogs feet*, and which they employ in wading through marſhy ground? Theſe ſame clowns have, in like manner, imitated that of the pointed and divergent ſpurs of the goat's foot, which aſſiſt them in ſcrambling over the rocks, in their pikes ſhod with two iron points, contrived to prevent the backward motion of loaded carriages, on the declivity of mountains.

Nature, who varies her means with the obſtacles to be ſurmounted, has beſtowed the appendix excreſcences on the heels of the hog, for the ſame reaſon that ſhe has clothed the rhinoceros with a hide rolled up in ſeveral folds, in the midſt of the torrid Zone. This clumſy animal has the appearance of being inveſted with a threefold mantle: But, being deſtined to live in the miry moraſſes of India, where he grubs up with his horny ſnout the long roots of the bamboo, he would have been in danger of ſinking, from his enormous weight, had he not been endowed with the ſtrange faculty of extending, by blowing himſelf up, the multiplied folds of his ſkin, and of rendering himſelf lighter, by occupying a larger ſpace.

What to us appears, at firſt ſight, a deficiency in animals, is, you may reſt perfectly aſſured, a moſt wonderful compenſation of Providence; and it would be, in many caſes, an exception from her general laws, if ſhe had any other than the utility and happineſs of the beings which ſhe has formed. Hence ſhe has given to the elephant a proboſcis, which ſerves him, like a hand, as he ſcrambles over the rougheſt mountains, where he delights to live, in picking up the graſs of the field, and the foliage of the

trees, which the thickneſs and inflexibility of his neck would not permit him otherwiſe to reach.

She has infinitely varied, among the animal creation, the means of defence, as well as thoſe of ſubſiſtence. It is impoſſible to ſuppoſe that thoſe which move ſlowly, or which ſcream violently, are in a ſtate of habitual ſuffering: For how could a race of creatures always ſickly perpetuate itſelf, nay, become one of the moſt univerſally diffuſed of the whole Globe? The ſluggard, or ſloth, is found in Africa, in Aſia and in America. His tardineſs is no more a paralytic affection, than that of the turtle and of the ſnail. The cries which he utters, when you go near him, are not the cries of pain. But among animals, ſome being deſtined to roam about over the face of the Earth, others to remain fixed on a particular poſt, their means of defence are varied with their manners. Some elude their enemies by flight; others repel them by hiſſings, by hideous figures, by poiſonous ſmells, or lamentable cries. There are ſome which deceive the eye, ſuch as the ſnail, which aſſumes the colour of the walls, or of the bark of trees, to which he flees for refuge; others, by a magic altogether inconceivable, transform themſelves, at pleaſure, into the colour of ſurrounding objects, as the cameleon.

O, how ſteril is the imagination of Man, compared to the intelligence of Nature! He has produced no one thing, in any line whatever, of which he has not borrowed the model from her Works. Genius itſelf, about which ſuch a noiſe is made, this creative genius, which our wits fondly imagine they brought into the world with them, and have brought to perfection in learned circles, or by the aſſiſtance of books, is neither leſs nor more than the art of obſerving. Man cannot forſake the path of Nature, even when he is determined to go wrong. We are wiſe only with her wiſdom: And we play the fool only in proportion as we attempt to derange her plans.

The graver of *Callot*, ſo prolific of monſters, never patched up ſo many frightful demons, as the ill aſſorted members of different animals, the beak of the owl, the jaws of the crocodile, the body of the horſe, the wings of the bat, the fangs and the paws which he has united to the human figure, to render his contraſts more hideous. Our female friends, too, who, ſweetly capricious, amuſe themſelves with embroidering fancy flowers on the various articles of their dreſs, are reduced to the neceſſity of borrowing their patterns from the garden. Examine, on their gowns and handkerchiefs, the ſportive productions of their imagination: There you have the flower of the pink, on the foliage of the myrtle; roſes on the ſtalk of the reed; pomegranates in the place of ears of corn. Nature alone produces none but rational harmonies; and aſſorts, in both animals and plants only parts adapted to the places, to the air, to the elements, to the uſes, for which ſhe has deſtined them. Never was a race of monſters beheld iſſuing from the ſublimity of her conceptions.

I have frequently heard living monſters announced for exhibition at our fairs; but I never had the fortune to ſee a ſingle one, whatever trouble I could take to that effect. One day a placard was diſplayed, at the fair of Saint Ovide, "a cow with three eyes, and a ſheep with ſix feet." I had a curioſity to ſee theſe animals, and to examine into the uſe which they made of organs and members, to my apprehenſion, entirely ſuperfluous. How, ſaid I to myſelf, Nature plant ſix legs under the body of a ſheep, when four were amply ſufficient to ſupport it? At the ſame time, I began to recollect, that the fly, who is much lighter than the ſheep, had ſix; and this reflection, I acknowledge, ſtaggered me. But having one day obſerved a fly which had alighted on the paper before me, I found ſhe frequently employed herſelf in alternately bruſhing her head and wings with the two fore and the two hinder feet. I then evidently perceived, that ſhe had occaſion for ſix feet, in order to have the ſupport of four, while the

ther two were applied to the bruſhing ſervice, eſpecially on a perpendicular plane. Having caught, and examined her by the microſcope, I diſcovered that the two middle feet had no bruſh, but that the other four had. I farther obſerved, that her body was covered over with particles of duſt, which adhere to it, in the atmoſphere through which ſhe flies; and that her bruſhes were double, furniſhed with fine hairs, between which ſhe emitted, and drew back, at pleaſure, two claws, ſimilar to thoſe of a cat, but incomparably ſharper. Theſe claws enable the fly to lay hold of the moſt poliſhed ſurfaces, ſuch as the glaſs of mirrors, along which you ſee them march upward and downward, without ſliding.

I was very curious to ſee in what manner Nature had attached two new legs to the body of a ſheep, and how ſhe had formed, in order to put them in motion, new nerves, new veins and new muſcles, with their inſertions. The third eye of the cow perplexed me ſtill more. I had nothing for it, then, but, like other ſimpletons, to part with my money for the gratification of my curioſity. The people were coming out in crowds, from the repoſitory of thoſe wonders, delighted and aſtoniſhed with their pennyworth. At laſt, I too had the ſatisfaction of contemplating the marvellous ſight. The two ſuperfluous legs of the ſheep were nothing but two ſhrivelled pieces of ſkin, cut out like thongs, and hanging down from the breaſt, but without touching the ground, and incapable of being of any uſe whatever to the poor animal. The pretended third eye of the cow, was a kind of oval wound in the middle of the forehead, without orbit, without apple, without a lid, and without any membrane which preſented one ſingle organized part of an eye. I withdrew, without examining whether theſe accidents were natural or artificial, for, in truth, it was not worth the trouble.

The monſters which are preſerved in cryſtal globes filled with ſpirit of wine, ſuch as pigs with the proboſcis of an elephant; children double bodied, or with two

heads, which are exhibited in cabinets, with a philoſophic myſterioufneſs, prove much leſs a laboured production of Nature than the interruption of it. No one of thoſe beings could poſſibly have attained a complete expanſion: And ſo far from demonſtrating, that the intelligence which produced them had fallen into a blunder, they atteſt, on the contrary, the immutability of Supreme Wiſdom, which has rejected them from its plan, by refuſing them life.

There is a benignity, in the conduct of Nature toward Man, which challenges the higheſt admiration: It is this, that in defying him, on the one hand, to infringe the regularity of her laws, to gratify caprice; on the other, ſhe frequently permits him to derange the courſe of ſome of them, to relieve his neceſſities. For inſtance, ſhe connives at the production of the mule from the copulation of the aſs and the mare, becauſe that animal is ſo ſerviceable in mountainous countries, but poſitively forbids the reproduction to proceed, in order to preſerve the primitive ſpecies, which are of more general utility.

It is eaſy to diſcern, in moſt of her works, theſe maternal condeſcenſions and, May I call them ſo? regal proviſions. They manifeſt themſelves particularly in the productions of the garden. We find them in thoſe of our flowers which have a profuſion of *corollæ*, as in the double roſe, which is not reproduced by ſeeds, and which, for this reaſon, certain Botaniſts have dared to brand with the name of monſter, though it be the fineſt of flowers, in the eſtimation of all perſons of taſte and ſenſibility. Naturaliſts pretend, that it deviated from the laws of Nature, becauſe it ſcorned to conform to their Syſtems: As if the firſt of laws, which governs the World, had not for its object the happineſs of Man! But if roſes, and other flowers, which have a ſuperabundance of *corollæ*, are monſters, fruits which have a ſuperabundance of pulpy fleſh, and ſugary paſtes, of no uſe toward the expanſion of their ſeeds, ſuch as apples, pears, mel-

ons and fruits which have no ſeeds at all, as the pine apple, the banana, the bread fruit, all theſe muſt likewiſe be monſters. The roots which become ſo plump in our kitchen gardens, and which are converted into large balls, into ſucculent glands, into bulbs farinaceous, and of no effect toward the expanſion of their ſtems, muſt, forſooth, be all monſters.

Nature feeds the human race, in part, only with this vegetable ſuperabundance, and beſtows it only as the reward of Induſtry. However fertile the ſoil may be, the vegetables of the ſame ſpecies with thoſe which are produced in the garden, degenerate in the uncultivated plain, grow wild, and ſpend themſelves in foliage and branches. Is it not, therefore, an inſtance of wonderful complaiſance on the part of Nature, that ſhe ſhould transform, under the hand of Man, into pleaſant and wholeſome aliment, the ſame juices which would be converted, in the foreſt, into lofty ſtems, and tough roots? Where this condeſcenſion withheld, in vain would man ſay to the ſap of trees, you ſhall flow into the fruit, and you ſhall go no farther. To no purpoſe would he, in the moſt fertile region, prune, crop, nip; the almond tree would refuſe to cover its nut with a fleſhy melting pulp, like that of the peach.

Nature, from time to time, makes Man a preſent of varieties both uſeful and agreeable, which ſhe extracts from the ſame genus. All our fruit trees come originally from the foreſt, and no one there reperpetuates itſelf in its ſpecies. The pear called Saint Germain was found in the foreſt of that name, with its well known flavour. Nature culled it, like the other fruits of our orchards, from the table of the animal, to ſerve it up on that of Man; and that it might be impoſſible for us to doubt reſpecting her bounty and its origin, it is her ſovereign will that the ſeeds ſhould reproduce crabs only. Ah! if ſhe were to ſuſpend her particular laws of beneficence in the gardens of our miſcreants, in order to eſtabliſh in them her pre-

tended general laws, what would be their aſtoniſhment to find nothing reproduced in their kitchen gardens and orchards, but ſome miſerable wild carrots, pitiful dog roſes, harſh pears, and unſavoury fruits of every ſort, ſuch as ſhe produces, on the mountains, for the coarſe palate of the wild boar! They would, in truth, find ſtems of trees lofty and vigorous. Their orchards would be doubled in ſize, and the crops reduced to one half.

The ſame metamorphoſis would take place in the animals of their farm yards. The hen, which lays eggs much too large in proportion to her ſize, and that for nine months uninterruptedly, contrary to all the laws of incubation among the feathered race, would then fall back into the general order, and would produce, at ſartheſt, twenty eggs in the courſe of a year. The hog would, in like manner, loſe his ſuperfluous fat. The cow, which yields, in the rich paſtures of Normandy, up to twentyfour quarts of milk a day, would give no more than a bare ſufficiency to ſuckle her calf.

To this it is replied, that this profuſion of eggs, of fat, and of cream, from our domeſtic animals, is the effect of their copious feeding. But neither does the mare give as much milk as the cow, nor does the duck lay as many eggs as the hen, nor does the aſs clothe himſelf with fat like the hog, though theſe animals all feed as plentifully the one as the other. Beſides, the mare, the ſhe goat, the ewe, the ſhe aſs, have only two teats, whereas the cow has four.

The cow, in this reſpect, deviates, in a very remarkable manner, from the general laws of Nature; who has adjuſted, in every animal ſpecies, the number of teats in the mother to that of the young; ſhe, however, is furniſhed with four paps, though ſhe produces but one calf, and very rarely two; becauſe the two ſupernumeraries were deſtined to be nurſes to the Human Race. The ſow it is granted, has only twelve teats, though ſhe is intended to bring up, ſometimes, a litter of fifteen or more. Here

the proportion ſeems defective. But if the firſt has more teats than are requiſite to the number of her family, and the ſecond too few for her's, it is becauſe the one is ordained to preſent Man with the ſurplus of her milk, and the other with that of her brood. In all countries, pork is the poor man's meat, unleſs religion, as in Turkey, or political conſiderations, as in the iſlands of the South Sea, deprive him of the benefit of this gift of Nature. I ſhall obſerve, with Pliny, that of all fleſh it is by far the moſt ſavoury. There may be diſtinguiſhed in it, ſays he, up to fifty different reliſhes. It is employed in the kitchens of the rich to give flavour to every ſpecies of aliment. In every country, I repeat it, that which is beſt is always moſt common.

Is it not paſſing ſtrange that, when ſo many plants and animals exhibit proportions ſo beautiful, adaptations ſo wonderful to our neceſſities, and proofs ſo evident of a Divine Benevolence, we ſhould ſet about collecting ſhapeleſs abortions, pigs with a long proboſcis, as if our yards teemed with young elephants, and ceremoniouſly arrange them in our cabinets, deſigned to exhibit a diſplay of Nature? Thoſe who preſerve them as invaluable curioſities, and deduce from them conſequences and doubts reſpecting the intelligence of their AUTHOR, Do they not diſcover as much want of taſte, and act as unfairly, as one who ſhould go into the workſhop of a Founder, and pick up the figures which had been accidentally mutilated, the bubblings over of the melting pot, and the mere metallic moulds which might lie ſcattered about, and triumphantly diſplay them as a proof of the Artiſt's blundering ignorance?

The Ancients burnt monſters, the Moderns preſerve them in ſpirit of wine. They reſemble thoſe ungracious children, who watch their mother, in the hope of ſurpriſing her in a fault, that they may arrogate to themſelves a right to do what they pleaſe. Oh! if the Earth were indeed abandoned to diſorder, and that after an in-

finity of combinations, there ſhould at leaſt appear, amidſt the monſters which covered it, a ſingle body well proportioned, and adapted to the neceſſities of Man, what a ſource of ſatisfaction would it be to creatures at once ſenſible and unhappy, to catch but a glimmering of an INTELLIGENCE, ſomewhere, who took an intereſt in their deſtiny?

STUDY SIXTH.

REPLIES TO THE OBJECTIONS AGAINST PROVIDENCE, FOUNDED ON THE CALAMITIES OF THE HUMAN RACE.

THE arguments, deduced from the varieties of the Human Race, and from the evils accumulated by the hand of Nature, by Governments, and by Religions, on the head of Man, attempt to demonſtrate, that men have neither the ſame origin, nor any natural ſuperiority above the beaſts; that their virtues are deſtitute of all proſpect of reward, and that no Providence watches over their neceſſities, to ſupply them.

We ſhall enquire into thoſe evils, one after another, beginning with ſuch as are imputed to Nature; the neceſſity and utility of which we ſhall endeavour to make appear; and ſhall afterwards demonſtrate, that political evils are to be aſcribed entirely to deviations from the law of Nature, and conſtitute, themſelves, a proof of the exiſtence of a Providence.

Our diſcuſſion of this intereſting ſubject ſhall commence with a reply to the objections founded on the varieties of the human ſpecies. We pretend not to deny, that there are men black and white, copper coloured and pale. Some have a beard, others little, if any. But theſe pretended characters are accidents merely, as has been already ſhewn. Horſes white, bay or black, with frizzled

hair, as thoſe of Tartary, or with ſleek, ſmooth hair, as thoſe of Naples, are unqueſtionably animals of the ſame ſpecies. The *Albinos*, or white Negroes, are a ſpecies of Lepers; and no more form a particular race of Negroes, than perſons with us who have been marked by the ſmall pox form a race of ſpotted Europeans.

Though it does not enter into my plan here to detail all the natural adaptations, which may be oppoſed to all the accuſations of our wretched ſyſtems of Phyſics, and though I have reſerved, in the proſecution of this undertaking, ſome Studies expreſsly devoted to this object, as far as my poor ability enables me, I ſhall, however, by the way, obſerve, that the black colour is a bleſſing of Providence to the inhabitants of tropical countries. White reflects the rays of the Sun, and black abſorbs them. The firſt, accordingly, redoubles his heat, and the ſecond weakens it. Experience demonſtrates this in a thouſand different ways. Nature has employed, among other means, the oppoſite effect of theſe colours, for multiplying, or weakening, on the Earth, the heat of the Orb of day. The farther you advance toward the South, the blacker are men and animals; and the farther you proceed northward, the whiter is the colour of both the one and the other. Nay, when the Sun withdraws from the northern regions, many animals which were there, in Summer, of different colours, begin to whiten; ſuch as ſquirrels, wolves, hares.....and thoſe of the ſouthern regions, to which he is approaching, then clothe themſelves with tints deeper and more abſorbent. Such are, in the feathery race, the *widow*, the cardinal, &c. which exhibit much more powerful colouring, when the Sun approaches toward the Line, than when he is retiring from it, it is therefore, by adaptations of climate, that Nature has made the inhabitants of the torrid Zone black, as ſhe has whitened thoſe of the icy Zones. She has given, beſides, another preſervative againſt the heat to the Negroes who inhabit Africa, which is the hotteſt part of the Globe,

principally by reaſon of that broad belt of ſand which croſſes it, and whoſe utility we have indicated. She has covered the head of thoſe careleſs and uninduſtrious tribes, with a fleece more criſp than a tiſſue of wool, which effectually ſhelters it from the burning heat of the Sun. They are ſo perfectly ſenſible of its accommodation to this purpoſe, that they never employ a ſubſtitute head dreſs; and there is no deſcription of Mankind among whom artificial coverings, as bonnets, turbans, hats, &c. are more rare, than among the Negroes. They uſe ſuch as are foreign to them, merely as objects of vanity and luxury, and I do not know of any one that is peculiar to their Nation. The inhabitants of the peninſula of India are as black as they; but their turbans communicate to the hair, which, but for their head dreſs, would, perhaps, be frizzled, the facility of growing and expanding.

The American tribes which inhabit under the Line, are not black, it muſt be admitted; they are ſimply copper coloured. I aſcribe this weakening of the black tint to ſeveral cauſes peculiar to their country. The firſt is, the univerſal practice of rubbing themſelves over with *roucou* (a kind of ſweet ſcented paſte) which preſerves the ſurface of their ſkin from the too vehement impreſſion of the Sun. Secondly, they inhabit a country clothed with foreſts, and croſſed by the greateſt river in the World, which covers it with vapours. Thirdly, their territory riſes inſenſibly from the ſhores of Braſil, up to the mountains of Peru; which, giving it a greater elevation in the Atmoſphere, procures for it, likewiſe, a greater degree of coolneſs. Fourthly, in a word, the Eaſt Winds, which blow there inceſſantly, night and day, are always contributing to that coolneſs.

Finally, the colour of all thoſe Nations is ſo much the effect of Climate, that the deſcendants of Europeans, ſettled there, aſſume the black tint after a lapſe of ſome generations. This is evidently perceptible in India, in the poſterity of the Moguls, tribes derived from the extremity

of Aſia, whoſe name ſignifies *whites*, and who are this day as black as the Nations which they have conquered.

Tallneſs of ſtature no more characterizes ſpecies, be the genus what it may, than difference of colour. A dwarf and a large apple tree proceed from the ſame grafts. Nature, however, has rendered it invariable in the Human Species alone, becauſe variety of magnitude would have deſtroyed, in the phyſical order, the proportions of Man with the univerſality of her productions, and becauſe it would have involved, in the moral order, conſequences ſtill more dangerous, by ſubjecting, beyond recovery, the ſmaller ſpecies of Mankind to the greater.

There are no races of dwarfs, nor of giants. Thoſe which are exhibited at fairs, are little men contracted, or tall overgrown fellows, without proportion and without vigor. They reproduce not themſelves either in miniature or magnitude, whatever pains may have been taken by certain Princes to procure a diſtinct propagation; among others, by the late King of Pruſſia, Frederic II. Beſides, Do ſufficient varieties of proportion of the Human Species iſſue from the hand of Nature to merit the diſtinctive appellation of dwarfs and giants? Is there between any two of them ſo great a difference, as between a little Sardinian poney and a huge Brabant horſe; as between a ſpaniel, and one of the large Daniſh dogs which run before our coaches?

All nations have been from the beginning, and ſtill are, with very little difference, and very few exceptions, of the ſame ſtature. I have ſeen Egyptian Mummies, and the bodies of the *Guanches* * of the Canary iſlands wrap-

* GUANCHES, are the ſkeletons, covered with the ſkin, of the original inhabitants of the Canary Iſlands. The body of the Guancho was depoſited in a cavity adapted to its ſize, hewn out of the rock. The ſtone being of a porous nature, the animal juices were abſorbed, or filtered through, and the ſolid parts, with their natural ſkinny mantle, became indurated, by a proceſs of natural embalming, to ſuch a degree as to reſiſt the future aſſaults of time. They are ſtill exhibited, by the natives of thoſe iſlands, to ſtrangers who viſit them, with emotions of pride and veneration; as the images of

ped up in their ſkins. I have ſeen in Malta, in a tomb hewn out of the ſolid rock, the ſkeleton of a Carthaginian, all the bones of which were violet coloured, and which had, perhaps, lain there from the days of Queen Dido. All theſe bodies were of the common ſize. Enlightened and ſober minded Travellers have reduced to a ſtature hardly exceeding our own, the pretended gigantic form of the Patagonians. I am aware that I have elſewhere alleged theſe ſame reaſons; but it is impoſſible to repeat them too frequently, becauſe they overturn, beyond the poſſibility of contradiction, the pretended influences of Climate, which are become the principles of our Phyſics, and, what is ſtill worſe, of our Morality.

There were formerly, we are told, real giants. The thing is poſſible; but this truth is become to us inconceivable, like all others of which Nature no longer furniſhes any teſtimony. If Polyphemuſes, lofty as a tower, ever exiſted, every ſtep they took in walking muſt, in moſt ſoils, have ſunk into the ground. How could their long and clumſy fingers have milked the little ſhe goats, reaped the corn, mowed down the graſs, picked the fruits of the orchard? The greateſt part of our aliments would eſcape their eyes as well as their hands.

On the other hand, had there been generations of pigmies, how could they have levelled the foreſts to make way for the cultivation of the earth? They would have loſt themſelves among the ruſhes. Every brook would have been to them a river, and every pebble a rock. The birds of prey would have carried them off in their talons,

their illuſtrious anceſtors were oſtentatiouſly diſplayed by the Patrician families of Rome. Avarice has, however, infected the Canaries, as well as more enlightened Iſlands; and families have been prevailed on to part with their *Guanches* to the Muſeums of European Collectors of Curioſities, for a little ready money, or in conſideration of a large order of wines.

——Quid non mortalia pectora cogis,
Auri ſacra fames!

in plain Engliſh, *The love of money will make a man ſell his father.* H. H.

unleſs they made war upon their eggs, as *Homer* repreſents his pigmy race engaged in war with the eggs of cranes.

On either of theſe two ſuppoſitions, all the relations of natural order are burſt aſunder, and ſuch diſcords neceſſarily involve the utter deſtruction of all ſocial order. Suppoſe a nation of giants to exiſt poſſeſſed of our induſtry, and inſtigated by our ferocious paſſions. Let us place at the head of it, a *Tamerlane*, and ſee what would become of our fortifications and of our armies before their artillery, and their bayonets.

As much as Nature has affected variety in the ſpecies of Animals of the ſame genus, though they were to inhabit the ſame regions, and to ſubſiſt on the ſame aliments, ſo much has ſhe ſtudied uniformity in the production of the Human Species, notwithſtanding the difference of Climates and of food. The accidental prolongation of the coccyx, in ſome human individuals, has been miſtaken for a natural character, and a new ſpecies of men with tails, has been grafted on a principle ſo flimſy. Man may degrade himſelf to the level of the beaſt, by the indulgence of brutal appetite; but never was his noble form diſhonoured by the tail, the forked feet, and the horns of the brute. In vain is the attempt made to trace an approximation of Man toward the claſs of mere animals, by inſenſible tranſitions.

Were there any human race in animal forms, or any animal endowed with human reaſon, they would be publicly exhibited. We ſhould have them in Europe, eſpecially in times like theſe, when the whole Globe is pervaded and ranſacked by ſo many enlightened Travellers; and when, I do not ſay Princes, but puppet players import alive into our fairs, the Zebra ſo wild, the elephant ſo lumpiſh, tigers, lions, white bears, nay, up to crocodiles; which have all been preſented to public inſpection in London.

Vain is the attempt to eſtabliſh analogies between the human female, and the ſhe ourang outang, from the ſituation and configuration of the boſom, from the periodical ſexual purgations, from the attitude, and even from a ſort of modeſty. Though the female ourang outang paſſes her life in the woods, *Allegrain*, ſurely, as has been obſerved, never could have modelled after her, his ſtatue of Diana, which is ſhewn at Lucienne. There is a much greater difference ſtill between the reaſon of Man and that of the beaſts, than there is between their forms; and that man's muſt have been ſtrangely perverted, who could advance, as a celebrated Author has done, that there is a greater diſtance between the underſtanding of *Newton*, and that of ſuch or ſuch a man, than between the underſtanding of this man and the inſtinct of an animal. As we have already ſaid, the dulleſt of Mankind can learn the uſe of fire, and the practice of agriculture, of which the moſt intelligent of animals is abſolutely incapable; but what I have not yet ſaid, the ſimple uſe of fire, and the practice of agriculture, are far preferable to all *Newton*'s diſcoveries.

Agriculture is the art of Nature, and fire her primary agent. From experience we are aſſured, that men have acquired by means of this element and of this art a plenitude of intelligence, of which all their other combinations, I venture to affirm, are merely conſequences. Our Sciences and Arts are derived, for the greateſt part, from theſe two ſources, and they do not conſtitute a difference more real between the underſtanding of one man and another, than there is between the dreſs and furniture of Europeans and thoſe of Savages. As they are perfectly adapted to the neceſſities of the one and of the other, they eſtabliſh no real difference between the underſtandings which contrived them. The importance which we aſſign to our talents, proceeds not from their utility, but from our pride. We ſhould take a material ſtep towards its humiliation, did we conſider that the animals which have

no ſkill in agriculture, and know not the uſe of fire, attain to the greateſt part of the objects of our Arts and Sciences, and even ſurpaſs them.

I ſay nothing of thoſe which build, which ſpin, which manufacture paper, cloth, hives, and practiſe a multitude of other trades, of which we do not ſo much as know. But the torpedo defended himſelf from his enemies by means of the electric ſhock, before Academies thought of making experiments in electricity; and the limpet underſtood the power of the preſſure of the air, and attached itſelf to the rocks, by forming the vacuum with its pyramidical ſhell, long before the air pump was ſet a going. The quails which annually take their departure from Europe, on their way to Africa, have ſuch a perfect knowledge of the autumnal Equinox, that the day of their arrival in Malta, where they reſt for twentyfour hours, is marked on the almanacks of the iſland, about the 22d of September, and varies every year as the Equinox. The ſwan and wild duck have an accurate knowledge of the Latitude where they ought to ſtop, when, every year they reaſcend, in Spring, to the extremities of the North, and can find out, without the help of compaſs or octant, the ſpot where the year before they made their neſts. The frigat, which flies from Eaſt to Weſt, between the Tropics, over vaſt Oceans interrupted by no Land, and which regains at night, at the diſtance of many hundred leagues, the rock hardly emerging out of the water which he left in the morning, poſſeſſes means of aſcertaining his Longitude, hitherto unknown to our moſt ingenious Aſtronomers.

Man, it has been ſaid, owes his intelligence to his hands: But the monkey, the declared enemy of all induſtry, has hands too. The ſluggard, or ſloth, likewiſe has hands, and they ought to have ſuggeſted to him the propriety of fortifying himſelf; of digging, at leaſt, a retreat in the earth, for himſelf and for his poſterity, expoſed as they are to a thouſand accidents, by the ſlowneſs of

their progreſſion. There are animals in abundance furniſhed with tools much more ingenious than hands, and which are not, for all that, a whit more intelligent. The gnat is furniſhed with a proboſcis, which is at once an awl proper for piercing the fleſh of animals, and a pump by which it ſucks out their blood. This proboſcis contains, beſides, a long ſaw, with which it opens the ſmall blood veſſels at the bottom of the wound which it has made. He is likewiſe provided with wings, to tranſport him wherever he pleaſes; a corſlet of eyes ſtudded round his little head, to ſee all the objects about him in every direction; talons ſo ſharp, that he can walk on poliſhed glaſs in a perpendicular direction; feet ſupplied with bruſhes for cleaning himſelf; a plume of feathers on his forehead; and an inſtrument anſwering the purpoſe of a trumpet to proclaim his triumphs. He is an inhabitant of the Air, the Earth, and the Water, where he is born in form of a worm, and where, before he expires, the eggs, which are to produce a future generation are depoſited.

With all theſe advantages, he frequently falls a prey to inſects ſmaller, and of a much inferior organization. The ant which creeps only, and is furniſhed with no weapons except pincers, is formidable not to him only, but to animals of a much larger ſize, and even to quadrupeds. She knows what the united force of a multitude is capable of effecting; ſhe forms republics; ſhe lays up ſtore of proviſions; ſhe builds ſubterraneous cities; ſhe forms her attacks in regular military array; ſhe advances in columns, and ſometimes conſtrains Man himſelf, in hot countries, to ſurrender his habitation to her.

So far is the intelligence of any one animal from depending on the ſtructure of its limbs, that their perfection is frequently, on the contrary, in the inverſe ratio of its ſagacity, and appears to be a kind compenſation of Nature to make up a defect. To aſcribe the intelligence of Man to his hands, is to deduce the cauſe from the means, and talent from the tool with which it works. It is juſt as if

I were to ſay, that *Le Sueur* is indebted for the happy native graces of his pictures to a pencil of ſable's hair; and that *Virgil* owes all the harmony of his verſes to a feather of the ſwan of Mantua.

It is ſtill more extravagant to maintain, that human reaſon depends on Climate, becauſe there are ſome ſhades of variety in manners and cuſtoms. The Turks cover their heads with turbans, and we cover ours with hats; they wear long flowing robes, and we dreſs in coats with ſhort ſkirts. In Portugal, ſays *Montagne*, they drink off the ſediment of wines, we throw it away. Other examples, which I could quote, are of ſimilar importance. To all this I anſwer, that we would act as theſe people, if we were in their country; and that they would act as we do, were they in ours.

Turbans and flowing robes are adapted to hot countries, where the head and body ſtand in need of being cooled, by incloſing in the covering of both a greater maſs of air. From this neceſſity has ariſen the uſe of turbans among the Turks, the Perſians and Indians, of the mitres of the Arabians, of the bonnets like a ſugar loaf of the Chineſe and Siameſe, and that of wide and flowing robes, worn by moſt of the Nations of the South. From a contrary neceſſity, the Nations of the North, as the Polanders, the Ruſſians, the Tartars, wear furred caps and cloſe garments. We are obliged to have, in our rainy Climates, three aqueducts upon our head, and garments ſhortened, becauſe of the dirt. The Portugueſe drink the ſediment of wine; and ſo would we do with the wines of Portugal; for in ſweet wines, as thoſe of hot countries, the moſt ſugary particles are at the bottom of the caſk; and in ours, which are ſprightly, nothing is at the bottom but mere dregs, the beſt is uppermoſt. I have ſeen in Poland, where they drink great quantities of the wines of Hungary, the bottom of the bottle preſented as a mark of preference. Thus the very varieties of national cuſtoms prove the conſiſtency of human reaſon.

Climate has no greater influence in changing human morality, which is reaſon in perfection. I admit, at the ſame time, that extreme heat and cold produce an effect on the paſſions. I have even remarked, that the hotteſt days of Summer, and the coldeſt of Winter, were actually the ſeaſons of the year when moſt crimes were committed. The dog days, ſay the vulgar, is a ſeaſon of calamity. I could ſay as much of the month of January. I believe it muſt have been in conformity to theſe obſervations, that ancient Legiſlators had eſtabliſhed, for that critical period, feſtivals deſigned to diſſipate the melancholy of Mankind, ſuch as the feaſt of Saturn among the Romans, and the feaſt of Kings * among the Gauls. In each Nation the feſtival was adapted to the public taſte; among the Romans, it preſented the images of a republic; among our anceſtors thoſe of monarchy.

But I beg leave, likewiſe, to remark, that thoſe ſeaſons fertile in crimes, are the ſeaſons, too, of the moſt ſplendid actions. This effervescence of ſeaſon acts on our ſenſes, like that of wine. It produces in us an extraordinary impulſion, but indifferently to good and to evil. Beſides, Nature has implanted in our ſoul two powers, which ever balance each other in juſt proportion. When the phyſical ſenſe, Love, debaſes us, the moral ſentiment, Ambition, raiſes us up again. The equilibrium neceſſary to the empire of Virtue ſtill ſubſiſts, and it is never totally loſt, except in perſons with whom it has been deſtroyed by the habits of ſociety, and more frequently ſtill by thoſe of education. In that caſe, the predominant paſſion,

* The *Feaſt of Kings* I apprehend, is coeval with the Chriſtian Era, and had its origin in the ſtar directed viſit of the Eaſtern Magi to Bethlehem of Judah, recorded in the beginning of the ſecond chapter of the Goſpel according to St. Matthew. We can hardly ſuppoſe the ancient Gauls ſo extremely attached to irregular and unſteady Monarchy, as to inſtitute and celebrate annual feaſts in honour of it. Whatever may be in this, modern Gauls can ſay of the political body, what the *Médecin malgré lui* of *Moliere*, ſays, reſpecting the natural body: *We have changed all that.* H. H.

having no longer any counterpoiſe, aſſumes the command of all our faculties; but this is the fault of ſociety, which undergoes the puniſhment of it, and not that of Nature.

I remark, however, that theſe ſame ſeaſons exert their influence on the paſſions of Man, by acting only on his moral, and not on his phyſical principle. Though this reflection has ſomething of the air of paradox, I ſhall endeavour to ſupport it by a very remarkable obſervation. If the heat of Climate could act on the human body, it aſſuredly would be when one is in his mother's womb: For it then acts on that of all animals, whoſe expanſion it accelerates. Father *du Tertre*, in his excellent Hiſtory of the Antilles, ſays, that in thoſe iſlands, the period of geſtation of all European animals is ſhorter than in temperate Climates; and that the hen's eggs are not longer in hatching, than the ſeeds of the orange in burſting their ſhell, twentythree days. Pliny had obſerved in Italy, that they hatch in nineteen days in Summer, and in twentyfive in Winter.

In every country, the temperature of Climate haſtens, or retards, the expanſion of all plants, and the geſtation of all animals, the Human Race excepted: Let this be carefully remarked. "In the Antilles iſlands," ſays Father *du Tertre*, "the white women and the negreſſes go with "child nine months, as in France." I have made the ſame remark in all the countries through which I have travelled, in the Iſle of France, under the Tropic of Capricorn, and in the extremity of Ruſſian Finland. This obſervation is of conſiderable importance. It demonſtrates that the body of Man is not ſubjected, in this reſpect, to the ſame laws with other animals. It manifeſts a moral intention in Nature, to preſerve an equilibrium in the population of Nations, which would have been deranged, had the pregnancy of the woman been of ſhorter duration in hot countries than in cold. This intention is farther manifeſted in the admirable proportion ſhe maintains in the production of the two ſexes, ſo nearly equal in

number, and in the very difference which we find, of one country from another, between the number of males and females : For it is compenſated from North to South, in ſuch a manner, that if there be rather more women born to the South, there are rather more men born to the North ; as if Nature meant to attract and to unite Nations, the moſt remote from each other, by intermarriages.

Climate has an influence on morality, but by no means determines it ; and though this ſuppoſed determination may be conſidered, in many modern Books, as the fundamental baſis of the Legiſlation of the Nations, there is no one philoſophical opinion more completely refuted by hiſtoric teſtimony. " Liberty," ſay they, " has found " her aſylum in the lofty mountains ; from the North it " was that the haughty conquerors of the World iſſued " forth. In the ſouthern plains of Aſia, on the contrary, " reign deſpotiſm, ſlavery, and all the political and mor- " al vices which may be traced up to the loſs of liberty."

So then, we muſt go and regulate, by our barometers, and thermometers, the virtues and the happineſs of Nations ! There is no neceſſity to leave Europe, in order to find a multitude of monarchical mountains, ſuch as thoſe of Savoy, a part of the Alps, of the Apennines, and the whole of the Pyreneans. We ſhall ſee, on the contrary, many republics in plains, ſuch as thoſe of Holland, of Venice, of Poland, and even of England. Beſides, each of thoſe territories has, by turns, made trial of different ſorts of government. Neither cold, nor ruggedneſs of ſoil, inſpire men with the energy of liberty, and ſtill leſs with the unjuſt ambition of encroaching on that of others. The peaſants of Ruſſia, of Poland, and of the cold mountains of Bohemia, have been ſlaves for many ages paſt ; whereas the Angrias, and the Marattahs, are free men and tyrants in the South of India. There are ſeveral republics on the northern coaſt of Africa, where it is exceſſively hot. The Turks, who have laid hold of the fineſt provinces of Europe, iſſued from the mild Climate of A-

ſia. The timidity of the Siameſe, and of moſt Aſiatics, has been quoted; but it is to be imputed, in thoſe Nations, to the multitude of their tyrants, rather than to the heat of their countries. The Macaſſars, who inhabit the iſland of Célèbes, ſituated almoſt under the Line, are poſſeſſed of a courage ſo intrepid, as the gallant Count *Forbin* relates, that a ſmall number of them, armed with poniards only, put to flight the whole force under his command, at Bancock, conſiſting of Siameſe and French, though the former were very numerous, and the others armed with muſkets and bayonets.

If from courage we make the tranſition to love, we ſhall find that Climate has no more a determining power over Man, in the one caſe than in the other. I might refer myſelf, for proof of the exceſſes of this paſſion, to the teſtimony of travellers, to aſcertain which has the ſuperiority, in this reſpect, the Nations of the South, or thoſe of the North. In all countries love is a torrid Zone to the heart of Man. I muſt obſerve, that theſe appropriations of Love to the Nations of the South, and of Courage, to the Nations of the North, have been imagined by our Philoſophers, as effects of Climate, applicable only to foreign nations: For they unite theſe two qualities, as effects of the ſame temperament, in thoſe of our heroes to whom they mean to pay their court. According to them, a Frenchman great in feats of love, is likewiſe great in feats of war; but this does not hold as to other Nations. An Aſiatic, with his ſeraglio, is an effeminate coward; and a Ruſſian, or any other ſoldier of the North, whoſe Courts give penſions, is a ſecond Mars. But all theſe diſtinctions of temperament, founded on Climate, and ſo injurious to Mankind, vaniſh into air, before this ſimple queſtion: Are the turtle doves of Ruſſia leſs amorous than thoſe of Aſia; and are the tigers of Aſia leſs ferocious than the white bears of Nova Zembla?

Without going to ſeek among men objects of compariſon and contraſt, from difference of place, we ſhall find

greater diverſity in manners, in opinions, in habiliments, nay, in phyſiognomy, between an opera actor and a capuchin friar, than there is between a Swede and a Chineſe. What a contraſt is the talkative, flattering, deceitful Greek, ſo fondly attached to life, to the ſilent, ſtately, honeſt Turk, ever devoted to death! Theſe men, ſo very oppoſite, are born, however, in the ſame cities, breathe the ſame air, live on the ſame food. Their extraction, we ſhall be told, is not the ſame; for pride, among us, aſcribes a mighty influence to the power of blood. But the greateſt part of thoſe Janiſſaries, ſo formidable to the cowardly Greeks, are frequently their own children, whom they are obliged to give in tribute, and who paſs, by a regular proceſs, into this firſt corps of the Ottoman ſoldiery. The courteſans of India ſo voluptuous, and its penitents ſo auſtere, Are they not of the ſame Nation, and, in many caſes, of the ſame family?

I beg leave to aſk, In what inſtance was an inclination to vice or virtue known to be communicated with the blood? *Pompey*, ſo noted for his generoſity, was the ſon of *Strabo*, infamouſly notorious to the Roman people for his avarice. The cruel *Domitian* was brother to the gracious *Titus*. *Caligula* and *Agrippina*, the mother of *Nero*, were, indeed, brother and ſiſter; but they were the children of *Germanicus*, the darling hope of Rome. The barbarous *Commodus* was ſon to the divine *Marcus Aurelius*. What a difference is frequently obſervable in the ſame man, between his youth and his mature age; between *Nero*, ſaluted as the Father of his Country, when he mounted the throne; and *Nero*, execrated as its avowed enemy before his death: Between *Titus*, ſtigmatized with the name of a ſecond *Nero*, in his youth, and *Titus* at his death; embalmed with the tears of the Senate, of the Roman people, and of ſtrangers; and tranſmitted unanimouſly to poſterity as the delight of mankind?

It is not Climate, then, which regulates the morality of Man; it is opinion, it is education; and ſuch is their

power, that they triumph not only over latitudes, but even over temperament. *Ceſar*, ſo ambitious, ſo diſſolute; and *Cato*, ſo temperate and virtuous, were both of a ſickly conſtitution. Place, Climate, Nation, Family, Temperament, no one of theſe, and in no part of the World, determine men to vice or to virtue. They are every where free to chooſe.

Before we take into conſideration the evils which men bring upon themſelves, let us attend to thoſe which are inflicted by the hand of Nature. It is demanded, Why ſhould beaſts of prey exiſt? They are abſolutely neceſſary. But for them the Earth would be infeſted with cadaverous ſubſtances. There periſhes, annually, of a natural death, the twentieth part, at leaſt, of quadrupeds, the tenth part of fowls, and an infinite number of inſects, moſt of the ſpecies of which live only one year. Nay, there are inſects whoſe life is contracted to a few hours, ſuch as the ephemera.

As the rains convey all theſe ſpoils of the land to the rivers, and thence to the Seas, it is, accordingly, on their ſhores, that Nature has collected the animals which are deſtined to conſume them. Moſt of the ferocious animals deſcend by night from the mountains, to hunt for their prey in this direction; there are even ſeveral claſſes created expreſsly for ſuch ſituations; as the whole amphibious race; for example, the white bear, the otter, the crocodile. It is in hot countries eſpecially, where the effects of corruption are moſt rapid and moſt dangerous, that Nature has multiplied carnivorous animals. Tribes of lions, tigers, leopards, panthers, civet cats, ounces, jackals, hyenas, condors, &c. reſort thither, to reinforce thoſe of wolves, foxes, martens, otters, vultures, crows, &c. Legions of voracious crabs are neſtled in their ſands; the caimans and the crocodiles lie in ambuſh among their reeds; ſhell fiſh, of innumerable ſpecies, armed with utenſils fit for ſucking, piercing, filing, bruiſing, roughen the face of the rocks, and pave the borders of their ſeas;

clouds of ſea fowls hover, with a loud noiſe, over their ſhallows, or fail round and round, at the diſcretion of the waves, in queſt of food; the lamprey, the becune, the carang, and the whole ſpecies of cartilaginous fiſhes, which live only on fleſh, ſuch as the hygian, the long ſhark, the broad thorn back, the ſlipper, the polypus, armed with air holes, and all the varieties of ſea dogs, ſwim there in crowds, conſtantly employed in devouring the wreck of bodies thrown upon the ſhore.

Nature calls in, beſides, the inſect legions to haſten forward their conſumption. The waſps, furniſhed with ſciſſars, cut aſunder the fleſhy parts; the flies pump out the fluids, the ſea worms cut in pieces the bones. Theſe laſt, on the ſouthern coaſts and eſpecially at the mouths of rivers, are in ſuch prodigious quantities, and armed with augers ſo formidable, that they are capable of devouring a ſhip of war in leſs time than it coſt to build her; and have thereby reduced the maritime Powers to the neceſſity of lately ſheathing the bottoms of their ſquadrons with copper, as a ſecurity againſt their attacks.

The wrecks of all theſe bodies, after having ſerved for food to the innumerable tribes of other fiſhes, ſome of which are provided with beaks formed like a ſpoon, and others like a pipe, for picking up the very crumbs of this vaſt table; reduced at length, through ſuch a ſeries of digeſtions, into phlegms, into oils, into bitumens, and united to the pulps of vegetables, which deſcend from all quarters into the Ocean, would reproduce in its waters a new chaos of putrefaction, did not the currents convey their diſſolution to volcanoes, whoſe fires finiſh the proceſs of decompoſition, and give them back to the elements. For this reaſon it is, as has been already indicated, that volcanoes are frequent only in hot countries; that they are all ſituated in the vicinity of the Sea, or of great Lakes; that they are diſpoſed at the extremity of their currents; and that they owe entirely to the purification

of the waters, the ſulphurs and the bitumens which adminiſter a conſtant ſupply to their furnaces.

Animals of prey are by no means an object of terror to Man. Firſt, becauſe moſt of them roam abroad only in the night. They have prominent characters, which announce their approach even before it is poſſible to perceive them. Some ſavour ſtrongly of muſk, as the marten, the civet cat, the crocodile; others have ſhrill and piercing voices, which may be heard by night, at a great diſtance, as wolves and jackals; others are diſtinguiſhed by particoloured ſpots, or ſtreaks, which are perceptible a great way off, on the yellow ground of their ſkin; ſuch are the duſky ſtripes of the tiger, and the dark ſpots of the leopard. All of them have eyes which ſparkle in the dark. Nature has beſtowed ſome of theſe common ſignatures even on carnivorous and blood ſucking inſects; ſuch is the waſp, whoſe ground colour is yellow, ſurrounded with rings of black like the tiger, and the gnat, ſpotted with white upon a dark ground, who announces his approach by a loud buzzing. Even thoſe which attack the human body are furniſhed with remarkable indications. They either ſmell ſtrongly, as the bug; or preſent oppoſitions of colour to the places on which they fix, as white inſects on the hair; or the blackneſs of the flea contraſted to the whiteneſs of the ſkin.

A great many Writers exclaim violently on the cruelty of ferocious animals, as if our cities were liable to be invaded by ſwarms of wolves, or, as if bands of lions, from Africa, were, from time to time, making incurſions into our European colonies. They all ſhun the habitations of Man, and, as I ſaid, moſt of them ſtir abroad only in the night. Theſe diſtinctive characters are unanimouſly atteſted by Naturaliſts, Hunters and Travellers. When I was at the Cape of Good Hope, M. *de Tolback*, who was then Governor, informed me, that lions were formerly very common in the adjacent country; but that ſince the

Dutch had formed a ſettlement there, you muſt travel fifty or ſixty leagues up the country before one is to be ſeen.

After all, What is their ferocity to us? Even ſuppoſing we were not provided with arms, which they are incapable of reſiſting, and with a ſagacity far ſuperior to all their cunning, Nature has given us dogs able to combat, nay, to ſubdue them; and ſhe has moſt admirably adapted their ſpecies to thoſe of animals the moſt formidable. In the countries where lions are natives, there is likewiſe produced a breed of dogs capable of engaging them in ſingle combat. I ſhall quote, after the ancient, but learned tranſlation of *Dupinet*, what Pliny relates of a dog of this ſpecies, which was preſented to Alexander, by a King of Albania.* "King Alexander firſt oppoſed to "him a lion, which the dog preſently tore in pieces. "After that he ordered to let looſe an elephant, which "afforded him the higheſt diverſion that he ever had en-"joyed. For the dog, briſtling himſelf up from the "firſt, began to wheel about, and ſnarl, at the elephant; "then advanced to the attack, ſpringing on this ſide and "on that ſide, with all imaginable circumſpection: Now "leaping up to aſſault, now couching to the right, to "the left, which cauſed the elephant to turn and wind "about ſo frequently, that he was, at laſt, completely "tired out, and fell down with a ſhock which made the "ground tremble, on which the dog ſprung upon him, "and diſpatched him." I can hardly think this dog could be of the ſame race with our lap dogs.

The animals formidable to man are more to be feared from their ſmallneſs than from their magnitude; there is no one, however, but what may be rendered ſubſervient to his benefit. Serpents, centipeds, ſcorpions, toads, inhabit ſcarcely any other than humid and unwholeſome places, from which they keep us at a diſtance, more by their hideous figures than by their poiſons. Such ſer-

* Pliny's Natural Hiſtory, book viii. chap. xl.

pents as are really dangerous, give ſignals of their approach; ſuch are the rattles of the ſnake which bears that name. Few perſons periſh by their ſting, and only from their own careleſſneſs and imprudence. Beſides, our pigs and poultry eat them currently, without ſuffering the ſlighteſt inconvenience. Ducks, in particular, devour them with avidity, as they likewiſe do moſt poiſonous plants. Thoſe of the kingdom of Pontus acquired ſo much virtue by aliments of ſuch ſorts, which are common there, that Mithridates employed their blood in his famous counter poiſons.

There are, it is admitted, noxious inſects which prey upon our fruits, our corn, nay, our perſons. But if ſnails, may bugs, caterpillars, and locuſts, ravage our plains, it is becauſe we deſtroy the birds of our groves which live upon them; or, becauſe, that on tranſporting the trees of foreign countries into our own, ſuch as the great chefnut of India, the ebony, and others, we have tranſported with them the eggs of thoſe inſects which they nouriſh, without importing, likewiſe, the birds of the ſame climate which deſtroy them. Every country has thoſe peculiar to itſelf, for the preſervation of its plants. I have ſeen one, at the Cape of Good Hope, called the gardener's bird, inceſſantly employed in catching the worms and caterpillars, which he ſtuck on the thorny prickles of the buſhes. I have likewiſe ſeen, in the Iſle of France, a ſpecies of ſtarling called Martin, which comes from India, and which lives entirely on locuſts, and on other inſects which infeſt the cattle. If we were to naturalize theſe birds in Europe, no ſcientific diſcovery ever made would be ſo beneficial to Man.

But the birds of our own groves are ſtill ſufficient to clear our plains of noxious vermin, provided the bird catchers were laid under a prohibition to entrap them, as they do, by whole coveys in their nets, not to immure them in cages, but to make food of them. A fancy was adopted, ſome years ago, in Pruſſia, to exterminate the

race of ſparrows, as inimical to agriculture. Every peaſant in the country was ſubjected to an annual capitation tax of twelve heads of that kind of bird, which were employed in the manufacture of ſaltpetre, for in that country, nothing is ſuffered to go to waſte. At the end of the ſecond, or, at fartheſt, of the third year, it was diſcovered that inſects had devoured their crops, and it was ſpeedily found adviſable to invite the ſparrows from neighbouring countries, to repeople the kingdom with them. Theſe birds, it is true, do eat ſome grains of corn, when the inſects fail them; but theſe laſt among others the weevil, conſume the grain by buſhels, nay, by granaries. If, however, it were poſſible to extinguiſh the whole race of inſects, it would be the height of imprudence to ſet about it; for we ſhould deſtroy, along with them moſt of the feathered tribes of our plains, which have no other food for their young while in the neſt.

As to the animals which fall upon our corn in the granary, and our woollens in the warehouſe, ſuch as rats, mice, mites, moths; I find that the former are uſeful in purifying the earth from human excrement, which conſtitutes a conſiderable part of their food. Beſides, Nature has made Man a preſent of the cat, to clear the interior of his habitation from thoſe vermin. She has endowed this animal not only with uncommon agility, and with wonderful patience and ſagacity, but alſo with a ſpirit of domeſticity perfectly adapted to her employment. The cat attaches herſelf ſolely to the houſe. If the maſter removes, ſhe returns alone at night to her old habitation. She differs eſſentially in this from the dog, who attaches himſelf ſolely to the perſon of his maſter. The cat has the affection of a courtier, and the dog that of a friend; the former adheres to the poſſeſſion, and the latter to the man.

The weevil and the moth, ſometimes, commit, it is true, great depredations among our grain and our woollens. Some Writers have told us, that the common hen is ſuf-

ficient to clear the granaries of them: Poſſibly it may be ſo. We have, beſides, the ſpider and the ſwallow, which deſtroy them at the ſeaſon when they take wing. I ſhall here conſider only their political utility. On looking into thoſe prodigious magazines where monopolizers hoard up the proviſion and clothing of a whole province, are we not bound to bleſs the Hand that created the inſect which obliges them to bring theſe neceſſary commodities to market? Were grain as incorruptible as gold and ſilver, it would ſoon become as ſcarce. See under how many locks and doors theſe metals are ſecured. The commonalty would, at length, be completely deprived of their ſubſiſtence, if it were as little ſuſceptible of change as that which is the repreſentative of it. The mite and the moth firſt lay the miſer under the neceſſity of employing a good many hands in ſtirring about and ſifting his grain, till they force him at laſt to diſpoſe of it altogether. How many poor wretches would go naked, if the moth did not devour the wardrobes and warehouſes of the rich! What is moſt wonderful here, is, that the articles which miniſter to luxury are not liable to periſh by inſects, as thoſe which are ſubſervient to the moſt preſſing wants of human life. It is poſſible to preſerve, without any diminution of value, coffee, ſilk and cottons, even for ages; but in India, where theſe commodities are real neceſſaries of life, there are inſects which quickly corrode them, particularly cotton.

The inſects which attack the human body equally oblige the rich to employ thoſe who have nothing, as domeſtics, to keep up cleanlineſs around them. The Incas of Peru exacted even this tribute of the poor; for in all countries theſe inſects attach themſelves to Man, though it may have been ſaid, that they did not paſs the line. Beſides theſe inſects are rather teaſing than noxious: They draw off the bad blood. As they immoderately increaſe only in great heats, they invite us to have recourſe to bathing, which is ſo wholeſome, and yet ſo

much neglected among us, because being expensive, it is become an object of luxury.

After all, Nature has placed other insects near us, which destroy them; these are the spiders.* I have heard of an old officer, who being very much incommoded with bugs, at the Hospital of the Invalids, permitted the spiders to multiply round his bed, and thereby got the better of that nauseous vermin. This remedy, I am aware, will appear to many persons worse than the disease. But I believe it possible to find others more agreeable, in perfumes and oily essences; at least, I have remarked, that the odour of various kinds of aromatic plants puts to flight those abominable animals.

As to other calamities of Nature's inflicting, Man feels their pressure only because he deviates from her laws. If storms sometimes ravage his orchards and his corn fields, it is because he frequenly places them where Nature never intended they should grow. Storms scarcely ever injure any culture except the injudicious cultivation of Man. Forests and natural meadows never suffer in the slightest degree. Besides, they have their utility. Thunder storms purify and cool the air. The hail, with which

* I presume that it is a particular species of spider: For I am persuaded that there are as many species of these as there are of insects to be destroyed. They do not all expand nets; some catch their prey fairly in the chase, others succeed by lying in ambuscade. I have seen one in Malta of a very singular character, and which is to be found in every house of that island. Nature has bestowed on this species of spider the resemblance of a fly, in the head and fore part of the body. When she perceives a fly on the wall, she makes her first approaches in great haste, taking care always to maintain the higher station. When she has got within five or six inches of her object, she advances very slowly, presenting to it a treacherous resemblance; and when she has got within the distance of two or three inches, she makes a sudden spring on her prey. This violent leap, made on a perpendicular plane, must surely precipitate her to the ground. No such thing. You find her again still on the wall, whether she has made good her blow or missed it; for previously to this great effort, she had affixed a cord atop, by which to warp herself up again. Cartesian Philosophers, will you pretend, after this, to persist in maintaining that animals are merely machines!

they are ſometimes accompanied, deſtroys great quantities of hurtful inſects; and hails are frequent only at the ſeaſon when ſuch inſects hatch and multiply; in Spring, and Summer. But for the hurricanes of the torrid Zone, the ants and locuſts would render the iſlands ſituated between the Tropics totally uninhabitable.

I have already pointed out the utility, the abſolute neceſſity of the volcanoes, whoſe fires purify the waters of the Sea, as thoſe of the thunder purify the air. Earthquakes proceed from the ſame cauſe. Beſides, Nature communicates previous notice of their effects, and of the places where their focuſes are ſituated. The inhabitants of Liſbon know well that their city has been ſeveral times ſhattered by ſhocks of this kind, and that it is imprudent to build in ſtone. To perſons who can ſubmit to live in a houſe of wood, they have nothing formidable. Naples and Portici are perfectly acquainted with the fate of Herculaneum. After all, earthquakes are not univerſal; they are local and periodical. Pliny has obſerved that the Gauls were not ſubject to viſitations of this kind; but there are many other countries which know of them only by report. They are ſcarcely ever felt except in the vicinity of volcanoes, on the ſhores of the Sea, or of great Lakes, and only at certain particular portions of the ſhore.

As to the epidemical maladies of the Human Race, and the diſeaſes of animals, they are, in general, to be imputed to corrupted waters. Phyſicians, who have inveſtigated their cauſes, aſcribe them ſometimes to the corruption of the air, ſometimes to the mildew of plants, ſometimes to fogs: But all theſe cauſes are ſimply effects of the corruption of the waters, from which ariſe putrid exhalations that infect the air, and vegetables, and animals. This may be charged, in almoſt every inſtance, on the injudicious labours of Man. The moſt unwholeſome regions of the Earth, as far as I am at preſent able to recollect, are in Aſia, on the banks of the Ganges,

from which proceed, every year, putrid fevers, that, in 1771, coſt Bengal the life of more than a million of men. They have for their focus the rice plantations, which are artificial moraſſes, formed along the Ganges, for the culture of that grain. After the crop is reaped, the roots and ſtalks of the plant, left on the ground, rot and are transformed into infectious puddles, from which peſtilential vapours are exhaled. It is in the view of preventing theſe pernicious conſequences, that the culture of this plant has been expreſsly prohibited in many parts of Europe, eſpecially in Ruſſia, round Otzchakof, where it was formerly produced in great qnantities.

In Africa, the air of the iſland of Madagaſcar is corrupted, and from the ſame cauſe, during ſix months of the year, and will ever preſent an invincible obſtacle to any European ſettlement upon it. All the French colonies which have been planted there, periſhed one after another, from the putridity of the air; and I myſelf muſt, with the reſt, have fallen a victim to it, had not divine Providence, by means of which I could have no foreſight, prevented my intended expedition, and reſidence in that part of the world.

It is from the ancient miry canals of Egypt, that the leproſy and the peſtilence are perpetually iſſuing forth. In Europe, the ancient ſalt marſhes of Brouage, which the water of the Sea no longer reaches, and in which the rain waters ſtagnate, becauſe they are confined by the dikes and ditches of the old ſalt pits, are become conſtant ſources of diſtemper among the cattle. Similar diſeaſes, putrid and billious fevers, and the land ſcurvy, annually iſſue from the canals of Holland, which putrify, in Summer, to ſuch a degree, that I have ſeen, in Amſterdam, the canals covered with dead fiſhes; and it was impoſſible to croſs certain ſtreets, without obſtructing the paſſages of the mouth and noſe with your handkerchief. They have, indeed, forced a kind of current to the ſtagnant waters by means of wind mills, which pump them up, and throw

them over the dikes, in places where the canals are lower than the level of the Sea; but theſe machines are ſtill far too few in number.

The bad air of Rome, in Summer, proceeds from its ancient aqueducts, the waters of which are diffuſed among the ruins, or which have inundated the plains, the levels whereof have been interrupted by the magnificent labours of the ancient Romans. The purple fever, the dyſentery, the ſmall pox, ſo common all over our plains, after the heats of Summer, or in warm and humid ſprings, proceed, for the moſt part, from the puddles of the peaſantry, in which leaves and the refuſe of plants putrify. Many of our city diſtempers iſſue from the layſtalls which ſurround them, and from the cemeteries about our churches; and which penetrate into the very ſanctuary.

I do not believe there would have been a ſingle unwholeſome ſpot on the Earth, if men had not put their hands to it. The malignity of the air of St. Domingo has been quoted, that of Martinico, of Porto Bello, and of ſeveral diſtricts of America, as a natural effect of Climate. But theſe places have been inhabited by Savages, who, from time immemorial, have buſied themſelves in diverting the courſe of rivers, and choking up rivulets. Theſe labours conſtitute even an eſſential part of their defence. They imitate the beavers in the fortification of their villages, by inundating the adjacent country. Provident Nature, however, has placed thoſe animals only in cold Latitudes, where, in imitation of herſelf, they form lakes which ſoften the air; and ſhe has introduced running waters into hot Latitudes, becauſe lakes would there ſpeedily change, by evaporation, into putrid marſhes. The lakes which ſhe has ſcooped out in ſuch Latitudes, are all ſituated among mountains, at the ſources of rivers, and in a cool Atmoſphere. I am the more induced to impute to the Savages the corruption of the air, ſo murderous in ſome of the Antilles, that all the iſlands which have been found uninhabited were exceedingly whole-

ſome; ſuch as the Iſle of France, of Bourbon, of St. Helena, and others.

As the corruption of the air is a ſubject peculiarly intereſting, I ſhall venture to ſuggeſt, by the way, ſome ſimple methods of remedying it. The firſt is, to remove the cauſes of it, by ſubſtituting, in place of the ſtagnant puddles with which our plains abound, the uſe of ciſterns, the waters of which are ſo ſalubrious, when they are judiciouſly conſtructed. They are univerſally employed all over Aſia. Care ſhould, likewiſe, be taken to prevent the throwing the bodies, and other offal, of dead animals into the layſtalls of our cities; they ought to be carried to the rivers, which will be thereby rendered more productive of fiſh. In the caſe of Cities which are not waſhed by rivers to carry off the garbage, or if this method is found otherwiſe inconvenient, attention ſhould be paid, at leaſt, to placing the layſtalls only to the North and North Eaſt of ſuch cities, in order to eſcape, eſpecially during Snmmer, the fetid guſts which paſs over them from the South and South weſt.

The ſecond is, to abſtain from digging canals. We are well acquainted with the maladies which have reſulted from thoſe of Egypt, in the vicinity of Rome, and elſewhere, when care is not taken to keep them in repair. Beſides, the benefits derived from them are very problematical. To look at the medals which have been ſtruck in our own country, on occaſion of the canal of Briare, would we not be induced to think that the Strait of Gibraltar was henceforth to become ſuperfluous to the navigation of France? Granting it to have been of ſome little utility to the interior commerce of the country, has the miſchief done to the plains through which it paſſes been taken into the account, as a counterbalance? So many brooks and ſprings diverted from their courſe, and collected from every quarter, to be gulped up in one great navigable canal, muſt have ceaſed to water a very conſiderable extent of land. And can that be

conſidered as a great commercial benefit, which is injurious to agriculture? Canals are adapted only to marſhy places.

This is the third method of contributing to the reſtoration of the ſalubrity of the air. The attempts made in France to dry the marſhes, have always coſt us a great many men, and frequently, for that very reaſon, have been left incomplete. I can diſcover no other cauſe for this but the precipitancy with which ſuch works are undertaken, and the multiplicity of the objects which they are intended to embrace. The Engineer preſents his plan, the Undertaker gives in his eſtimate, the Miniſter approves, the Prince finds the money, the Intendant of the province provides the labourers; all things concur to the effect propoſed, except Nature. From the boſom of rotten earth ariſe putrid emanations, which preſently ſcatter death among the workmen.

As a remedy to theſe inconveniencies, I beg leave to throw out ſome obſervations, which I believe to be well founded. A piece of land entirely covered with water is never unwholeſome. It becomes ſo, only when the water which covers it evaporates, and expoſes to the air the muds of its bottom and ſides. The putridity of a moraſs might be remedied as effectually by transforming it into a lake, as into ſolid ground. Its ſituation muſt determine whether of theſe two objects is to be preferred. If it is in a bottom, without declivity, and without efflux, the indication of Nature ought to be followed up, and the whole covered with water. If there is not enough to form a complete inundation, it might be cut into deep ditches, and the ſtuff dug out thrown on the adjoining lands. Thus we ſhould have, at once, canals always full of water, and little iſles both fertile and wholeſome. As to the ſeaſon proper for ſuch labours, the Spring and Autumn ought to be preferred; and great care muſt be taken to place the labourers, with their faces to windward, and

to ſupply, by means of machinery, the neceſſity, to which they are frequently ſubjected, of plunging into mires and muds, to clear them away.

It has always appeared to me ſtrangely unaccountable, that in France, where there are ſuch numerous and ſuch judicious eſtabliſhments, we ſhould have miniſters of ſuperintendance for foreign affairs, for war, the marine, finance, commerce, manufactures, the clergy, public buildings, horſemanſhip, and ſo on, but never one for agriculture. It proceeds, I am afraid, from the contempt in which the peaſantry are there held. All men, however, are ſureties for each other; and, independently of the uniform ſtature and configuration of the Human Race, I would exact no other proof that all ſpring from one and the ſame original. It is from the puddle, by the ſide of the poor man's hovel, which has been robbed of the little brook, whoſe ſtream ſweetened it, that the epidemic plague ſhall iſſue forth to devour the lordly inhabitants of the neighbouring caſtle.

Egypt avenges herſelf, by the peſtilence ariſing out of her canals, of the oppreſſion of the Turks, who prevent her inhabitants from keeping them in repair. America, ſinking under the accumulated ſtrokes of Europeans, exhales from her boſom a thouſand maladies fatal to Europe, and drags down with her the haughty Spaniard expiring on her ruins. Thus the Centaur left, with Deïanira, his robe empoiſoned with the blood of the Hydra, as a preſent which ſhould prove fatal to his conqueror. Thus the miſeries which oppreſs Mankind, paſs from huts to palaces, from the Line to the Poles, from Ages paſt to Ages yet to come; and their long and lingering effects are a fearful voice crying in the ears of the Potentates of the Earth: "Learn to be juſt, and not to oppreſs the "miſerable."

Not only the elements, but reaſon itſelf, corrupts in the haunts of wretchedneſs. What torrents of error, fear,

ſuperſtition, diſcord, have broken out in the lower regions of Society, and ſwelled to the terror and the ſubverſion of Thrones! The more that men are oppreſſed, the more miſerable are their oppreſſors, and the more feeble is the Nation which they compoſe. For the force which tyrants employ to ſupport their authority at home, is never exerciſed but at the expenſe of that which they might employ, to maintain their reſpectability abroad.

Firſt, from the haunts of miſery iſſue forth proſtitutions, thefts, murders, conflagrations, highway robberies, revolts, and a multitude of phyſical evils beſides, which, in all countries, are the plagues that tyranny produces. But thoſe of opinion are much more terrible. One man is bent on ſubjugating another, not ſo much for the ſake of getting hold of his property, as to command his admiration, his reverence. Ambition propoſes to itſelf no boundary ſhort of this. To whatever condition he may be elevated, and however low his rival reduced; let him have at his mercy the fortune, the labour, the wife, the perſon, of his adverſary, he has gained no point, unleſs he has gained his homage. It availed Haman nothing to have the life, the goods, of the Jews, at his diſpoſal: He muſt ſee Mordecai proſtrated at his feet. Oppreſſors are thus the oppreſſed, and become the arbiters of their own happineſs; and the oppreſſed, for the moſt part, paying them back injuſtice for injuſtice, diſturb them with falſe reports, religious terrors, dark ſurmiſes, calumnies, which engender, among them, ſuſpicions, apprehenſions, jealouſies, feuds, lawſuits, duels; and, at laſt, civil wars, which iſſue in their total deſtruction.

Let us examine, in the caſe of ſome ancient and modern Governments, this reaction of evils upon each other, and we ſhall find its extent to be in proportion to the ills which they bring upon Mankind. On contemplating this tremendous balance, we ſhall be conſtrained to acknowledge the exiſtence of Sovereign Juſtice.

Without paying regard to the common diviſion of Governments,* into Democracy, Ariſtocracy and Monarchy, which are only, at bottom, political forms that

* Politicians, in claſſing Governments according to theſe exterior reſemblances in form, have acted preciſely as thoſe Botaniſts do, who comprehend in the ſame category, plants which have ſimilar flowers or leaves, without paying any attention to their virtues. The Botaniſt claſſes together the oak and the pimpernel; and the Politician the Roman Republic and that of St. Marino. This is not the way of obſerving Nature, ſhe is throughout nothing but adaptation and harmony. Her ſpirit, not her forms, is the great thing which we ought to ſtudy.

If in the Hiſtory of any People you do not attend to its moral and internal conſtitution, which ſcarcely any Hiſtorian keeps ſteadily in view, it will be impoſſible to conceive how Republics, apparently well conſtituted, have ſuddenly ſunk into ruin: How others, on the contrary, in which nothing but agitation appeared, became formidable: Whence ariſe the duration and the power of Deſpotic States, ſo much decried by modern Authors: And, finally, how it came to paſs, that, after the glorious reigns of *Marcus Aurelius* and of *Antonius*, which have been ſo highly extolled, the Roman Empire finiſhed its progreſs to diſſolution. It was, I am bold enough to affirm, becauſe thoſe good Princes thought only of preſerving the exterior form of the Government. All was tranquillity around them; the form of a Senate remained; Rome was well ſupplied with corn; the garriſons in the provinces were regularly paid. There was no ſedition, no diſturbance, every thing to appearance went on well. But during this lethargy, the rich were going on in an unbounded accumulation of property, and the people were loſing the little that they had. The great offices of the State were engroſſed by the ſame families. In order to have the means of ſubſiſtence, it was neceſſary for the commonalty to attach themſelves to the Great. Rome contained a populace of mere menials. The love of Country was extinguiſhed. The wretched did not know of what to complain. No one did them any wrong. All was orderly; but this very order precluded the poſſibility of their ever coming to any thing. They did not cut the throats of the citizens, as in the days of *Marius* and *Sylla*, but they ſtifled them.

In all human Society, there are two powers, the one temporal, and the other ſpiritual. You find them in all the Governments of the World, in Europe, in Aſia, in Africa, and in America. The Human Race is governed in the ſame way as the human body. Such is the will of the Author of Nature, in order to the preſervation and happineſs of Mankind. When Nations are oppreſſed by the ſpiritual power, they reſort for protection to the temporal; when this laſt oppreſſes, in its turn, they have recourſe to the other. When both theſe concur to render them miſerable, then ariſe hereſies in ſwarms, ſciſms, civil wars, and a multitude of ſecondary powers, which balance the abuſes of the two firſt, till there reſults, at length, a gen-

determine nothing, as to either their happineſs, or their power, we ſhall inſiſt only on their moral conſtitution.

Every Government, of whatever deſcription, is internally happy, and reſpectable abroad, when it beſtows on all its ſubjects their natural right of acquiring fortune and honours: And the contrary takes place, when it reſerves to a particular claſs of citizens, the benefits which ought to be common to all. It is not ſufficient to preſcribe limits to the People, and to reſtrain them within theſe by terrifying phantoms. They quickly force the perſon who puts them in motion, to tremble more than themſelves. When human policy locks the chain round the ancle of a ſlave, Divine Juſtice rivets the other end round the neck of the tyrant.

Few Republics have been more judiciouſly conſtituted than that of Lacedemon. Virtue and happineſs were ſeen to flouriſh there, during a period of five hundred years. Notwithſtanding the mediocrity of its extent, it gave law to Greece, and to the northern coaſts of Aſia; but as Lycurgus had not comprehended in his plan either the Nations which Sparta was to ſubdue, or even the Helots, who laboured the ground for her, by them were introduced the commotions, which ſhattered her Conſtitution, and at length, totally ſubverted it.

In the Roman Republic there ſubſiſted greater equality, and proportionally more power and happineſs. She was, indeed, divided into Patricians and Plebeians; but as theſe laſt were capable of attaining the higheſt military dignities, as they poſſeſſed, beſides, an excluſive title to the tribunitial office, the power of which equalled, nay, ſurpaſſed, that of the Conſuls, the moſt perfect harmony exiſted between the two orders. It is impoſſible to obſerve, without emotion, the deference and reſpect paid by

eral apathy, and the State falls into deſtruction. We ſhall preſently go into a thorough inveſtigation of this intereſting ſubject, when we come to ſpeak of France. We ſhall find that, though there is but one which governs, of right, there are five powers which govern, in fact.

the Plebeians to the Patricians, during the moſt glorious periods of the Republic. They ſelected their patrons from among that order; they attended them in crowds on their way to the Senate: When they happened to be poor, they aſſeſſed themſelves, to make up a marriage portion for their daughters. The Patricians, on the other hand, took an intereſt in all the affairs of the Plebeians; they pleaded their cauſes in the Senate; permitted them to bear their names; adopted them into their families, and gave them their daughters in marriage, when they diſtinguiſhed themſelves by their virtues. Theſe alliances with Plebeian families were not diſdained even by Emperors. *Auguſtus* gave his only daughter, *Julia*, in marriage to the Plebeian *Agrippa*. Virtue ſat enthroned at Rome; and no where elſe upon Earth were altars raiſed more worthy of her. A judgment of this may be formed from the rewards aſſigned to illuſtrious actions. A criminal was condemned to be ſtarved to death in priſon; his daughter is allowed permiſſion to viſit him there, and keeps him alive by the milk from her own breaſt. The Senate, informed of this inſtance of filial tenderneſs, voted a pardon to the father, in conſideration of the daughter, and on the ſpot where the priſon ſtood, commanded to rear a Temple ſacred to filial piety.

If a perſon condemned was carrying to execution, the ſentence was remitted, if a veſtal happened to paſs that way. The puniſhment, due to criminality, diſappeared in the preſence of virtue. If, in battle, one Roman ſaved another out of the hands of the enemy, he became entitled to the civic crown. This crown conſiſted only of oak leaves, nay, it was the only military crown which had nothing golden about it, but it conferred the right of ſitting, in the public theatres, on the bench adjoining to thoſe which were allotted to Senators, who all ſtood up in deference, on the entrance of him who wore it. It was, ſays Pliny, the moſt illuſtrious of all crowns, and communicated higher privileges than the mural, the obſidional

and naval crowns, becauſe there is more glory in ſaving a ſingle citizen, than in taking cities, or in gaining battles. It was the ſame, for this reaſon, whether the perſon ſaved was the commander in chief, or a private ſoldier; but it was not to be earned by delivering an allied King, who might have come to the aſſiſtance of the Romans. Rome, in the diſtribution of rewards, diſtinguiſhed only the citizen. By means of ſuch patriotic ſentiments, ſhe conquered the Earth; but ſhe was juſt only to her own people; it was by her injuſtice to other men, that ſhe became weak and unhappy. Her conqueſts filled her with ſlaves, who, under *Spartacus*, brought her to the brink of deſtruction, and which decided her fate at laſt by the arms of corruption, much more formidable than thoſe of war. By the vices and the flatteries of the Grecian and Aſiatic ſlaves at Rome, were formed within her boſom the *Catilines*, the *Ceſars*, the *Neros*; and while their voice was corrupting the maſters of the World, that of the Goths, the Cimbri, the Teutones, the Gauls, the Allobroges, the Vandals, the companions of their lot, was inviting their compatriots from the North and from the Eaſt, who at length levelled the glory of Rome with the duſt.

Modern Governments exhibit a ſimilar reaction of equity and felicity, of injuſtice and misfortune. In Holland, where the People may aſpire to every thing, abundance pervades the whole States, good order prevails in the cities, fidelity in wedlock, tranquillity in all minds; diſputes and lawſuits are rare in that country, becauſe every one is content. Few European Nations poſſeſs a territory ſo contracted, and no one has extended her power ſo far: Her riches are immenſe: She maintained ſingly ſucceſsful war againſt Spain in all its ſplendor, and afterwards againſt France and England united: Her commerce extends over the whole Globe: She poſſeſſes powerful colonies in America, thriving ſettlements in Africa, formidable kingdoms in Aſia. But if we trace up to their ſource the calamities and the wars with which ſhe has

been viſited for two centuries, it will be found that they proceed from the injuſtice of ſome of her ſettlements in thoſe countries. Her happineſs and her power are not to be attributed to her republican form of Government, but to that community of benefits, which ſhe preſents indiſcriminately to all her ſubjects, and which produces the ſame effects in deſpotic Governments, of which we have had repreſentations ſo frightful.

Among the Turks, as among the Dutch, there is no ſuch thing as quarrelling, or calumniating, or ſtealing, or proſtitution in the cities. Nay, there is not to be found, perhaps, over the whole Empire, a ſingle Turkiſh woman carrying on the trade of a courtezan. There is, in the general mind, neither reſtleſſneſs nor jealouſy. Every man ſees, without envy, in his ſuperiors, a felicity attainable by himſelf, and he is at all times ready to lay down his life for the Religion and Government of his Country. Their force abroad is by no means inferior to the perfection of their union at home. With whatever contempt our Hiſtorians may expoſe their ignorance and ſtupidity, they have actually made themſelves maſters of the fineſt provinces of Aſia, of Africa, of Europe, nay, of the Empire of the Greeks themſelves, with all their wit and learning, becauſe the ſentiment of patriotiſm, which unites them, is ſufficient to baffle all the talents and all the tactics in the world. They have undergone, however, frequent convulſions from the revolting of the conquered Nations; but the moſt dangerous proceed from their feebleſt adverſaries, from thoſe very Greeks, whoſe property they plunder with impunity, and whoſe children they annually carry off, as a tribute to recruit the Seraglio. From theſe ſame children iſſue, by a reacting Providence, moſt of the Janizaries, the Agas, the Pachas, the Baſhaws, the Viziers, which oppreſs the Turks, in their turn, and render themſelves formidable even to their Sultans.

It is this ſame community of hopes and of fortunes preſented, without diſtinction, to all conditions of men,

which has given ſo much energy to Pruſſia, whoſe internal police, and victories abroad, have been ſo highly celebrated by our political Writers, though its Government is ſtill more deſpotic than that of Turkey; for the Prince there is abſolute maſter at once in temporals and in ſpirituals.

The Republic of Venice, on the contrary, ſo well known for her courtezans, for the reſtleſſneſs and jealouſy of her Government, is extremely feeble externally, though ſhe is of higher antiquity, in a ſituation more advantageous, and under a much finer ſky than Holland. Venice is a maritime power in the Mediterranean, hardly acknowledged as ſuch in modern times, whereas Holland is enlivening the whole Earth by her commerce; becauſe the firſt has reſtricted the rights of humanity to the claſs of Nobility, and the ſecond has extended them to the whole people.

It is, farther, from the influence of this unjuſt partition, that Malta, with the fineſt port in the Mediterranean, ſituated between Africa and Europe, in the vicinity of Aſia, and ſwarming with a young Nobility of undaunted courage, will ever remain the laſt Power in Europe, becauſe the People there are reduced to nothing.

I ſhall here take occaſion to obſerve, that hereditary nobility in a State deſtroys, at once, all emulation in both the nobly and ignobly born. It is deſtroyed in the firſt, becauſe, being entitled by birth to pretend to every thing, they have no need to call in the aſſiſtance of merit; and in the ſecond, being excluded from every pretenſion to riſe, no degree of merit could avail them. This is the political vice which has undermined the power of Portugal, and that of Spain; and not the monaſtic ſpirit, as ſo many Writers have aſſerted. The monkiſh order was all powerful from the times of *Ferdinand* and *Iſabella*. It was a Monk who decided at Court, the expedition of *Chriſtopher Columbus* in queſt of a new World, the conqueſt of which quadrupled in Spain the number of Gentlemen. Not a

Spaniſh ſoldier went over to America, but gave himſelf out, on his arrival there, for a man of family, and who, on his return to Spain, with money in his pocket, did not make good his title. The ſame thing ſhewed itſelf among the Portugueſe, who made conqueſts in Aſia. The military order, in both theſe Nations, at that time performed prodigies, becauſe the career of ambition, in feats of arms, was then open to the commonalty. But ever ſince it has been ſhut againſt them, by the prodigious number of gentlemen with which theſe two States abound, the balance has turned in favour of the monaſtic order, and conferred upon it a tribunitial Power.

However wonderful our political ſpeculations may repreſent the threefold counterbalancing powers which conſtitute the Government of Great Britain, it is to the violent agitations of thoſe powers we muſt aſcribe the perpetual quarrels which diſturb her happineſs, and the venality which has, at length, corrupted her. The Commons, I grant, form one of her Houſes of Parliament, but the right of ſitting in it as a repreſentative, being reſtricted to perſons poſſeſſed of ſuch a revenue, its doors muſt, of courſe, be ſhut againſt the admiſſion of many a wiſe head, and be open to ſome not entirely of that deſcription. An *Alcibiades* and a *Cataline* might have made a ſhining figure there; but a *Socrates*, the juſt *Ariſtides*, *Epaminondas*, who transferred the Empire of Greece to Thebes, *Attilius Regulus*, who was called from the plough to the Dictatorſhip, *Menenius Agrippa*, who ſettled the diſpute between the Senate and People; no one of theſe could have procured a ſeat, becauſe he had not an eſtate in land worth ſo much a year. Britain would deſtroy herſelf by her very boaſted Conſtitution, did ſhe not preſent a common career to every citizen, in her Marine. All the Orders of the State concur in this point of union, and give it ſuch a preponderancy, that it fixes their political equilibrium. Whoever could deſtroy the Marine of England, would annihilate her Government. This unanimous concur-

rence of the whole Nation toward the cultivation of one ſingle Art, has raiſed it to a height of perfection hitherto unattained in any other Country, and has rendered it the ſole inſtrument of her power.

If we glance a look on the other States which bear the name of Republic, we ſhall find internal diſorder, and external weakneſs, increaſing in proportion to the inequality of the citizens. Poland has reſerved to the Nobility excluſively, all the authority, and left her Commonalty in the moſt deteſtable ſlavery ; ſo that war, which eſtabliſhes, between the citizens of one and the ſame Nation, a community of danger, eſtabliſhes, between thoſe of Poland, no community of reward. Her Hiſtory exhibits nothing but a long ſeries of bloody quarrels between Palatinate and Palatinate, City and City, Family and Family, which have always rendered her extremely miſerable. The greateſt part of the Nobility themſelves are there reduced to ſuch wretchedneſs, that they are obliged, for a ſubſiſtence, to ſerve the Grandees in the moſt contemptible employments, as our own Nobility formerly did under the feudal Government, and as is the caſe to this day in Japan : For wherever the peaſantry are ſlaves, the yeomanry are menials. The calamity has, at length, overtaken Poland, in our own days, which would have fallen upon her long ago, had not the Kingdoms which ſurround her laboured then under the ſame defects in their ſeveral Conſtitutions. She has been parcelled out by her neighbours, in deſpite of her long political diſcuſſions, as the Empire of the Greeks was by the Turks, at a time when certain prieſts, who had got poſſeſſion of the public mind, were amuſing them with theological ſubtilties.

In Japan, the wretchedneſs of the Nobles is in proportion to their tyranny. They formed at firſt a feudal Government, which it is ſo eaſy to ſubvert, as well as all thoſe of the ſame nature ; for the firſt of the feudal Chiefs who aſpired at the ſovereignty, effected his purpoſe by a ſingle battle. He curtailed their power of determining their

quarrels by civil wars, but left them in full poſſeſſion of all their other privileges ; that of abuſing the peaſants, who there are mere ſlaves, the power of life and death over all who are in their pay, even over their wives. The maſs of the people, who, in extreme miſery, have no way of ſubſiſting, but by intimidating or corrupting their tyrants, have produced, in Japan, an incredible multitude of bonzes, of all ſects, who have erected temples on every mountain ; comedians and drolls, who have theatres ſet up at every croſs ſtreet of their cities ; and courtezans in ſuch ſhoals, that the traveller is peſtered with them on every high road, and at every inn where he ſtops. But this very people ſet ſuch a high value on the conſideration exacted of them by the Nobility, that if ſo much as a croſs look paſſes between two of them, fight they muſt ; and if the inſult be any thing ſerious, it is abſolutely neceſſary that both parties ſhould rip up each other, under pain of infamy. To this hatred of its tyrants we muſt impute the ſingular attachment which the Japaneſe expreſſed for the Chriſtian Religion, becauſe they hoped it was to efface, by its morality, diſtinctions ſo abominable between man and man : And to popular prejudices we muſt refer, in the Nobility of that Country, the contempt which they expreſſed on a thouſand occaſions, for a life rendered ſo precarious from the opinion of another.

A ſage equality, proportioned to the intelligence, and to the talents of all her ſubjects, has, for a long time, rendered China the happieſt ſpot on the Globe : But a taſte for pleaſure having there, at laſt, produced a diſſolution of the moral principle, money, the inſtrument of procuring it, is become the moving principle of the Government. Venality has there divided the Nation into two great claſſes, the rich and the poor. The ancient ranks which, in that Country, elevated men to all the public offices, ſtill exiſt, but the rich only actually fill them. This vaſt and populous Empire having no longer any patriotiſm, but what conſiſts in certain unmeaning ceremonies,

has been, oftener than once, invaded by the Tartars, who were invited into the Country by the calamities which the People endured.

The Negroes, in general, are conſidered as the moſt unfortunate ſpecies of Mankind on the face of the Globe. In truth, it looks as if ſome deſtiny had doomed them to ſlavery. The ancient curſe, pronounced by *Noah*,* is by ſome believed to be ſtill actually in effect: "Curſed be "Canaan! a ſervant of ſervants ſhall he be unto his "brethren." They themſelves confirm it by their traditions. If we may give credit to a Dutch Author, of the name of *Boſman*, "the Negroes of the Guinea coaſt al-"lege, that GOD, having created blacks and whites, pro-"poſed to them the power of chooſing between two things, "namely, the poſſeſſion of gold, and of the art of reading "and writing; and as GOD gave the power of the firſt "choice to the blacks, they preferred gold; and they left "learning to the whites, which was accordingly granted "them. But that the CREATOR, provoked at the appe-"tite for gold which they had manifeſted, immediately "paſſed a decree, that the whites ſhould have eternal do-"minion over them, and that they ſhould forever be "ſubject to their white brethren as ſlaves.†" I do not

* Geneſis, chap. ix. ver. 25.

† *Boſman's voyage to Guinea*, letter x. This deciſion of modern Negroes is highly to their honour. They ſeem to feel the ineſtimable value of knowledge. But could they have ſeen, in Europe, the condition of moſt men of literature, compared with that of men who poſſeſs gold, their tradition would have been completely reverſed.

Similar opinions may be traced through other African black tribes, particularly among the blacks of the Cape de Verd Iſlands, as may be ſeen in the excellent account given of them by *George Robert*. This unfortunate Navigator was obliged to flee for refuge to the Iſland of St. John, where he received from the inhabitants the moſt affecting proofs of generoſity and hoſpitality, after having undergone the moſt atrociouſly cruel treatment from his countrymen, the Engliſh pirates, who plundered his veſſel.

It muſt, however, be acknowledged, that if ſome African tribes excel us in moral qualities, the Negroes, in general, are very inferior to other Nations in thoſe of the underſtanding. They have never to this day diſcover-

mean to ſupport, by Sacred Authority, nor by that which theſe unfortunate wretches themſelves furniſh, the tyranny which we exerciſe over them. If the malediction of a Father has been able to extend ſuch an influence over his poſterity, the benediction of GOD, which, under the Chriſtian Religion, extends to them as well as to us, reeſtabliſhes them in all the liberty of the law of Nature. The precept of Chriſtianity, which enjoins us to conſider all men as brethren, ſpeaks in their behalf, as in behalf of

ed the addreſs of managing the elephant as the Aſiatics have done. They have carried no one ſpecies of cultivation to its higheſt degree of perfection. They are indebted for that of the greateſt part of their alimentary vegetables to the Portugueſe, and to the Arabians. They practiſe no one of the liberal Arts, which had made, however, ſome progreſs among the inhabitants of the New World, who are much more modern than they. Nature has placed them on a part of the Continent, from whence they might with eaſe have penetrated into America, as the winds which blow thither are eaſterly, that is, perfectly fair; but ſo far from that, they had not even diſcovered the iſlands in their vicinity, ſuch as the Canaries and the Cape de Verds. The black Powers of Africa have never to this hour diſcovered genius equal to the conſtruction of a brigantine. So far from attempting to extend their boundaries, they have permitted ſtrangers to take poſſeſſion of all their coaſts. For in ancient times, the Egyptians and Phenicians ſettled on their eaſtern and northern ſhores, which are now in poſſeſſion of the Turks and Arabians. And for ſome ages paſt, the Portugueſe, the Engliſh, the Danes, the Dutch and the French, have laid hold of what remained to the Eaſt and to the South, and to the Weſt, ſimply for the purpoſe of getting ſlaves.

It muſt needs be, after all, that a particular Providence ſhould have preſerved the patrimony of theſe children of Canaan, from the avidity of their brethren, the children of Shem and Japhet; for it is aſtoniſhing, that perſons ſuch as we are, the ſons of Japhet in particular, who, as being younger brothers, were hunting after fortune all the world over, and who, according to the benediction of Noah, our Father, were to extend our lodging even into the tents of Shem, our elder brother, ſhould never have eſtabliſhed colonies, in a part of the world ſo beautiful as Africa is, ſo near us, in which the ſugar cane, the coffee plant, and moſt of the productions of Aſia and America can grow, and, in a word, where ſlaves are the produce of the ſoil.

Politicians may aſcribe the different characters of Negroes and Europeans to whatever cauſes they pleaſe. For my own part, I ſay it on the moſt perfect conviction, that I know no book, which contains monuments more authentic of the Hiſtory of Nations, and of that of Nature, than the Book of Geneſis.

our own countrymen. If this were the proper place, I could demonſtrate how Providence enforces, in their favour, the laws of univerſal juſtice, by rendering their tyrants, in our colonies, a hundred times more wretched than they are. Beſides, How many wars have been kindled among the maritime Powers of Europe, on account of the African ſlave trade? How many maladies, and corruptions of blood in families, have not the Negroes produced among us?

But I ſhall confine myſelf to their condition in their own country, and to that of their compatriots who abuſe their power over them. I do not know that there ever exiſted among them a ſingle Republic, except it were, perhaps, ſome pitiful Ariſtocracy along the weſtern coaſt of Africa, ſuch as that of Fantim. They are under the dominion of a multitude of petty tyrants, who ſell them at pleaſure. But, on the other hand, the condition of thoſe kings is rendered ſo deplorable by prieſts, fetichas, grigris, ſudden revolutions, nay, the very want of the common neceſſaries of life, that few of our common ſailors would be diſpoſed to change ſtates with them. Beſides, the Negroes eſcape a conſiderable proportion of their miſeries, by the thoughtleſſneſs of their temper, and the levity of their imagination. They dance in the midſt of famine, as of abundance; in chains, as when at liberty. If a chicken's foot inſpires them with terror, a ſmall ſlip of white paper reſtores their courage. Every day they make up, and pull to pieces their gods, as the whim ſtrikes them.

It is not in ſtupid Africa, but in India, the ancient wiſdom of which ſtands in ſuch high reputation, that the miſeries of the Human Race are carried to their higheſt exceſs. The Bramins, formerly called Brachmans, who are the prieſts there, have divided the Nation into a variety of Caſts, ſome of which they have devoted to infamy, as that of the Parias. No one will doubt that they have taken care to render their own ſacred. No perſon is wor-

thy to touch them, to eat with them, much leſs to contract any manner of alliance. They have contrived to prop up this imaginary grandeur by incredible ſuperſtitions. From their hands have iſſued that infinite number of Gods, of monſtrous forms, which ſcare the human imagination all over Aſia. The Commonalty, by a natural reaction of opinions, render them, in their turn, the moſt miſerable of all mankind. They are obliged, in order to ſupport their reputation, to waſh themſelves from head to foot, on the ſlighteſt contamination by contact; to undergo frequent and rigorous faſtings; to ſubmit to penances the moſt horrible, before idols which they themſelves have rendered ſo tremendous. And as the people are not permitted to intermix blood with them, they conſtrain, by the power of prejudice over the tyrants, their widows to burn themſelves alive, with the body of the dead huſband.

Is it not, then, a very horrible condition, for men reputed wiſe, and who give law to their Nation, to be witneſſes of the untimely death, in circumſtances ſo ſhocking, of their female friends and relations, of their daughters, their ſiſters, their mothers? Travellers have cried up their knowledge: But is it not an odious alternative for enlightened men, either to terrify perpetually the ignorant, by opinions which, at the long run, ſubjugate even thoſe who propagate them; or, if they are ſo fortunate as to preſerve their reaſon, to make a ſhameful and criminal uſe of it, by employing it to diſſeminate falſehood? How is it poſſible for them to eſteem each other? How is it poſſible to retire within themſelves, and to lift up their eyes to that Divinity, of whom, as we are told, they entertain conceptions ſo ſublime, and of whom they exhibit to the People repreſentations ſo abominable?

Whatever may be, as far as their ambition is concerned, the melancholy fruit of their policy, it has drawn in its train the miſery of this vaſt Empire, ſituated in the fineſt region of the Globe. Their military is formed of

the Nobility, called Naïrs, who poſſeſs the ſecond rank in the State. The Bramins, in order to ſupport themſelves by force, as well as by guile, have admitted them to a participation in ſome of their privileges. Hear what *Walter Schouten* ſays, of the indifference expreſſed by the common People toward the Naïrs, when any miſchief befals them. After a bloody encounter, in which the Dutch killed a conſiderable number of thoſe who had taken the ſide of the Portugueſe : " No outrage or inſult," ſays he,* " was offered to any artiſan, peaſant, " fiſherman, or other inhabitant of Malabar, not even in " the rage of battle. They, in conſequence, never thought " of flight. A great many of them were poſted at dif- " ferent places, merely as ſpectators of the action ; and " they appeared to take no manner of intereſt in the fate " of the Naïrs."

I have been an eyewitneſs of the ſame apathy in Nations, whoſe Nobility forms a ſeparate claſs, among others, in Poland. The Commonalty of India ſubject the Naïrs, as well as the Bramins, to their ſhare of the miſeries of opinion. The Naïrs are incapacitated to contract legitimate marriages. Many of them, known by the name of Amocas, are obliged to ſacrifice themſelves in battle, or on the death of their kings. They are the victims of their unjuſt honour, as the Bramins are of their inhuman religion. Their courage, which is merely profeſſional ſpirit, far from being beneficial to their Country, is frequently fatal to it. From time immemorial, it has been deſolated by their inteſtine wars; and it is ſo feeble externally, that handfuls of Europeans have made ſettlements in it, wherever they pleaſed. At the cloſe of the war in 1762, a propoſition was made in the Parliament of Great Britain, to make the complete conqueſt of it, and to pay off the national debt, with the riches which might have been extracted out of it; and this the Pro-

* Voyage to the Eaſt Indies, vol. i. page, 367.

poſer undertook to effect, if he was landed in India with an army of five thouſand Europeans. The boldneſs of the enterprize aſtoniſhed no one of his compatriots, who were acquainted with the weakneſs of that Country, and it was laid aſide, as is alleged, merely from the injuſtice of it.

In France, the people never acquire any ſhare in the Government, from *Julius Ceſar*, who is the firſt Writer that has made this obſervation, and who is not the laſt politician that has availed himſelf of it, to render himſelf eaſily its maſter, down to Cardinal *Richlieu*, who levelled the feudal power. During this long interval, our Hiſtory preſents nothing but a ſeries of diſſenſions, of civil wars, of diſſolute manners, of aſſaſſinations, of Gothic laws, of barbarous cuſtoms; and furniſhes nothing intereſting to the Reader, let the Preſident *Henault*, who compares it to the Roman Hiſtory, ſay what he will. It is not merely becauſe the fictions of the Romans are more ingenious than ours; it is becauſe we do not find in our Hiſtory that of a people, but only the hiſtory of ſome great family.

From this, however, muſt be excepted the Lives of ſome good Kings, ſuch as thoſe of St. *Louis*, of *Charles* V, of *Henry* IV; and of ſome good Men, who are intereſting to us, for this very reaſon, that they intereſted themſelves in behalf of the Nation. In every other caſe, it is impoſſible to diſcover about what the Government was employing itſelf: It ſtudied the intereſt only of the Nobility. The Country was ſubjugated ſucceſſively by the Romans, the Francs, the Goths, the Alains, the Normans. The facility, with which France embraced Chriſtianity, is a proof that ſhe ſought, in religion, a refuge from the miſeries of ſlavery. To this ſentiment of confidence the Clergy is indebted for the firſt rank which it obtained in the State. But the Clergy ſoon degenerated from its firſt ſpirit; and ſo far from meditating the deſtruction of tyranny, enliſted under the banner of tyrants;

adopted all their cuſtoms; aſſumed their titles; appropriated to itſelf their rights and their revenues; and even made uſe of their arms to maintain intereſts which were in ſuch direct oppoſition to its morality. A great many churches had their knights and their champions, who ſupported their claims in ſingle combat.

It would be unfair to impute to religion, the miſchief occaſioned by the avarice and the ambition of her miniſters. She herſelf aſſiſts us in detecting their faults, and enjoins us to be on our guard againſt them. The greateſt Saints, St. Jerom,* among others, have expoſed and condemned the vices of the clergy, with more vehemence than ever modern Philoſophers have done. Much has been written of late to diſcredit religion, with a view to diminiſh the power of prieſts. But, univerſally, wherever ſhe has fallen, their power has increaſed. Religion herſelf alone reſtrains them within due bounds. Obſerve in the Archipelago, and elſewhere, how many fraudulent and lucrative ſuperſtitions have been ſubſtituted by the Greek *Papas* and *Caloyers*, in place of the ſpirit of the Goſpel! Beſides, whatever reproach may be caſt upon our own clergy, they have their anſwer ready, namely, that they have been, in all ages, like the reſt of their compatriots, the children of this world. The Nobles, Magiſtrates, Soldiers, nay, the Kings themſelves, of former times, were no better than they.

They have been accuſed of promoting every where the ſpirit of intolerance, and of aiming at ſuperiority, by preaching up humility. But moſt of them, repelled by the world, carry, into their profeſſional corps, that ſpirit of intolerance of which the world ſet the example, and of which they are the victims; and their ambition, frequently, is a mere conſequence of that univerſal ambition, with which national education, and the prejudices of ſociety, inſpire all the members of the State.

* Conſult his Letters.

Without meaning to make their apology, and much leſs ſatirically to inveigh againſt them, or any body of men whatever, whoſe evils it was not my wiſh to diſcover, except for the purpoſe of indicating the remedies which ſeem to me to be within their reach. I ſhall here confine myſelf to a few reflections on religion, which is, even in this life, the avenger of the wicked, and the conſolation of the good.

The world, in theſe days, conſiders religion as the concern only of the vulgar, and as a mere political contrivance to keep them in order. Our Philoſophers ſtate, in oppoſition to it, the philoſophy of *Socrates*, of *Epictetus*, of *Marcus Aurelius*; as if the morality of thoſe ſages were leſs auſtere than that of JESUS CHRIST; and as if the benefits to be expected from it were better ſecured than thoſe of the Goſpel! What profound knowledge of the heart of man; what wonderful adaptation to his neceſſities; what delicate touches of ſenſibility, are treaſured up in that divine Book! I leave its myſteries out of the queſtion. Part of them, we are told, have been taken from *Plato*. But *Plato* himſelf borrowed them from Egypt, into which he had travelled; and the Egyptians were indebted for them, as we are, to the Patriarchs. Theſe myſteries, after all, are not more incomprehenſible than thoſe of Nature, and than that of our own exiſtence. Beſides, in our examination of them, we inadvertently miſlead ourſelves. We want to penetrate to their ſource, and we are capable only of perceiving their effects. Every ſupernatural cauſe is equally impenetrable to man. Man himſelf is only an effect, only a reſult, only a combination for a moment. He is incapable of judging of divine things according to their nature, his judgment of them muſt be formed according to his own nature, and from the correſpondence which they have to his neceſſities.

If we make uſe of theſe teſtimonies of our weakneſs, and of theſe indications of our heart, in the ſtudy of re-

ligion, we ſhall find that there is nothing that can pretend to that name, on the face of the Earth, ſo perfectly adapted to the wants of human nature, as the religion of the Bible. I ſay nothing of the antiquity of its traditions. The Poets of moſt Nations, Ovid among the reſt, have ſung the Creation, the happineſs of the Golden Age, the indiſcreet curioſity of the firſt woman, the miſeries which iſſued from *Pandora*'s Box, and the Univerſal Deluge, as if they had copied theſe Hiſtories from the Book of Geneſis.

To the Moſaic account of the Creation, and the recent exiſtence of the World, have been objected the antiquity and the multiplicity of certain lavas in volcanoes. But have theſe obſervations been accurately made? Volcanoes muſt have emitted their fiery currents more frequently in the earlier ages, when the Earth was more covered with foreſts, and, when the Ocean, loaded with its vegetable ſpoils, ſupplied more abundant matter to their furnaces. Beſides, as I have ſaid in the courſe of this Work, it is impoſſible for us to diſtinguiſh between what is old and what is modern in the ſtructure of the World. The hand of Creation muſt have manifeſted the impreſs of ages upon it, from the moment of its birth. Were we to ſuppoſe it eternal, and abandoned to the laws of motion ſimply, the period muſt be long paſt when there could not have been the ſmalleſt riſing on its ſurface. The action of the rains, of the winds, and of gravity, would have brought down every particle of Land to the level of the Seas.

It is not in the works of GOD, but in thoſe of men, that we are enabled to trace epochs. All our monuments announce the late Creation of the Earth which we inhabit. If it were, I will not ſay, eternal, but of high antiquity only, we ſhould, ſurely, find ſome productions of human induſtry much older than from three to four thouſand years, ſuch as all thoſe that we are acquainted with. We have certain ſubſtances on which time makes no

very perceptible alteration. I have seen, in the poſſeſſion of the intelligent Count *de Caylus*, conſtellation rings of gold, or Egyptian taliſmans, as entire as if they had juſt come from the hand of the workman. Savages, who have no knowledge of iron, are acquainted with gold, and ſearch after it, as much for its durability as for its ſhining colour. Inſtead, then, of finding antiques of only three or four thouſand years, ſuch as thoſe of the moſt ancient Nations, we ought to poſſeſs ſome of ſixty, of a hundred, of two hundred thouſand years.

Lucrètius, who aſcribes the Creation of the World to atoms, on a ſyſtem of Phyſics altogether unintelligible, admits that it is quite a recent production.

> Præterea, ſi nulla fuit genitalis origo
> Terraï & cœli, ſemperque eterna fuere,
> Cur ſupra bellum Thebanum, & funera Trojæ,
> Non alias alii quoque res cecinêre Poetæ.
>
> *De rerum Natura, Lib. v. ver.* 325.*

" Had Heaven and Earth known no beginning of exiſt-
" ence, but endured from eternity, Why have we no Po-
" ets tranſmitting to us the knowledge of great events,
" prior to the Theban war, and the downfall of Troy?"

The Earth is filled with the religious traditions of our Scriptures: They ſerve as a foundation to the religion of the Turks, the Perſians, and the Arabians: They extend over the greateſt part of Africa: We find them again in India, from whence all Nations and all Arts originally proceeded: We can trace them in the ancient and intricate religion of the Bramins;† in the Hiſtory of Brama,

* Thus imitated:

> If genial Nature gave the Heavens no birth,
> And from eternal ages roll'd the Earth,
> Why neither wars nor Poets—Sages, tell,
> Till *Homer* ſung, how mighty *Hector* fell?

† See *Abraham Rogers*, his Hiſtory of the *Manners of the Bramins*.

or Abraham; of his wife Sarai, or Sara; in the incarnations of Wiſtnou, or of Chriſtnou; in a word, they are diffuſed even among the ſavage tribes which traverſe America.

I ſay nothing of the monuments of our religion, as univerſally diffuſed as her traditions, one of which, inexplicable on the principles of our Phyſics, proves a general Deluge, by the wrecks of marine bodies ſcattered over the ſurface of the Globe; the other, irreconcileable to the laws of our Politics, atteſts the reprobation of the Jews, diſperſed over all regions, hated, deſpiſed, perſecuted, without Government, without a Country; nevertheleſs, always numerous, always ſubſiſting, and always tenacious of their Law. To no purpoſe have attempts been made to trace reſemblances between their condition, and that of ſeveral other Nations, as the Armenians, the Guebres, and the Banians. But theſe laſt mentioned Nations hardly emigrate beyond the confines of Aſia: Their numbers are extremely inconſiderable: They are neither hated nor perſecuted by other Nations; they have a Country; and, finally, they have not adhered to the religion of their anceſtors. Certain illuſtrious Authors have ſtated theſe ſupernatural proofs of a Divine Juſtice, in a very ſtriking light. I ſhall ſatisfy myſelf with adducing a few more, ſtill more affecting, from their correſpondence to Nature, and to the neceſſities of Mankind.

The morality of the Goſpel has been challenged, becauſe JESUS CHRIST, in the country of the Gadarenes, permitted a legion of demons to take poſſeſſion of a herd of two thouſand ſwine, which were thereby precipitated into the Sea, and choked. "Why," aſk the objectors, "ruin the proprietors of thoſe animals?" JESUS CHRIST acted in this as a Legiſlator. The perſons to whom the ſwine belonged were Jews; they tranſgreſſed, therefore, the Law which declares thoſe animals unclean. But here again ſtarts up a new objection, levelled at Moſes. "Why are thoſe animals pronounced unclean?" Be-

cauſe, in the Climate of Judea, they are ſubject to the leproſy. But here is a freſh triumph for our Wits. "The Law of Moſes," ſay they, "was, then, relative to "Climate; it could be at moſt, of conſequence, a mere "political conſtitution." To this I anſwer, that if I found in either the Old Teſtament, or the New, any uſage whatever which was not relative to the Laws of Nature, I ſhould be ſtill more aſtoniſhed. It is the character of a Religion divinely inſpired, to be perfectly adapted to the happineſs of Man, and to Laws antecedently enacted by the AUTHOR of Nature. From this want of correſpondence, all falſe religions may be detected. And as to the point in queſtion, the Law of Moſes, from its privations, was evidently intended to be the Law of a particular People; whereas that of the Goſpel, from its univerſality, muſt have been intended for the whole Human Race.

Paganiſm, Judaiſm, Mahometaniſm, have all prohibited the uſe of certain ſpecies of animal food; ſo that if one of thoſe religions ſhould become univerſal, it would produce either total deſtruction, or unbounded multiplication; each of which evidently would violate the plan of the Creation. The Jews and Turks proſcribe pork; the Indians of the Ganges reverence the heifer and the peacock. There is not an animal exiſting which would not ſerve as a Feticha to ſome Negro, or as a Manitou to ſome Savage. The Chriſtian Religion alone permits the neceſſary uſe of all animals; and preſcribes abſtinence from thoſe of the Land, only at the ſeaſon when they are procreating, and when thoſe of the Sea abound on the ſhores, early in the Spring.*

* Is it poſſible to abſtain from ſmiling? No, the prejudices of education, in a good man, excite a ſerious emotion, in a benevolent mind. Brought up in the habit of abſtinence from animal food, during the ſeaſon of Lent, good M. *de Saint Pierre* takes it for granted, that this is an inſtitution of Chriſtianity, and endeavours ingeniouſly to reconcile it to a law of Nature. But the truth is, the Goſpel contains no ſuch injunction; and the univerſality of that religion is ſtill greater than even the enlarged mind of our Au-

All religions have filled their temples with carnage, and immolated to DEITY the life of the brute creation. The Bramins themſelves, ſo full of compaſſion to the beaſts, preſent to their idols the blood and life of men. The Turks offer in ſacrifice camels and ſheep. Our Religion, more pure, if we attend merely to the matter of the ſacrifice, preſents in homage to GOD bread and wine, which are the moſt delicious gifts which He has beſtowed on Man. Nay, here we muſt obſerve, that the vine, which grows, from the Line up to the fiftyſecond degree of North Latitude, and from England to Japan, is the moſt widely diffuſed of all fruit trees; that corn is almoſt the only one of alimentary plants which thrives in all Climates; and that the liquor of the one, and the flour of the other, is capable of being preſerved for ages, and of being tranſported to every corner of the Earth.

All religions have permitted to men, a plurality of women in marriage: Chriſtianity permitted but one, long before our Politicians had obſerved that the two ſexes are

thor apprehended, in one reſpect at leaſt. How can it be imagined, that JESUS CHRIST, in faſting ſo long in the Wilderneſs, intended to ſet the example of an annual abſtinence of the ſame duration, to his diſciples? What Jew ever thought of making *Moſes* a pattern in this ſame reſpect? But while I regret the power of prejudice in another, let me take care that my own be overcome; or if any remain, that they be harmleſs, or rather on the ſide of virtue.

In the very next paragraph, our Author is betrayed into a ſimilar miſtake, reſpecting the nature and deſign of the Sacrament of the Lord's Supper, by the phraſe in uſe, in that Church whoſe communion he had, from education, adopted. That ordinance is, in Roman Catholic countries, denominated the *ſacrifice* of the maſs. Carried away by the word *ſacrifice*, M. *de Saint Pierre* is led to repreſent the Chriſtian Worſhipper as preſenting to GOD, in the Sacrament, *an offering* of bread and wine. But it is not ſo. He is commanded to *take and eat*, to *take and drink*, in remembrance of CHRIST. The ſacrifice which Chriſtianity demands, and which every ſincere communicant preſents to GOD, is the *living ſacrifice* of himſelf, which St. Paul calls our *reaſonable ſervice*. We meet, however, with a beautiful train of thought, in what follows, reſpecting the elementary part of the inſtitution, ſtrongly characteriſtic of a pious, penetrating, and comprehenſive mind; and which the devout Proteſtant may peruſe to advantage. H. H.

born in nearly equal numbers. All have boaſted of their genealogies; and, regarding with contempt moſt other Nations, have permitted their votaries, when they had it in their power, to reduce them to a ſtate of ſlavery. Ours alone has protected the liberty of all men, and has called them back to one and the ſame deſtination, as to one and the ſame origin. The religion of the Indians promiſes pleaſure in this world; that of the Jews, riches; that of the Turks, conqueſt: ours enjoins the practice of virtue, and promiſes the reward of it in Heaven. Chriſtianity alone knew that our unbounded paſſions were of divine original. It has not limited love, in the heart of Man, to wife and children, but extends it to all Mankind: It circumſcribes not ambition to the ſphere of a party, to the glory of one Nation, but has directed it to Heaven and Immortality: Our Religion intended that our paſſions ſhould miniſter as wings to our virtues.* So far from

* Religion alone gives a ſublime character to our paſſions. It diffuſes charms ineffable over innocence, and communicates a divine majeſty to grief. Of this I beg leave to quote two inſtances. The one is extracted from an account, not in very high eſtimation, of the Iſland of St. Erini, (chap. xii.) by Father *Francis Richard*, a jeſuit miſſionary; but which contains ſome things that pleaſe me from their native ſimplicity. Of the other I was an eye witneſs.

"After dinner," ſays Father *Richard*, "I retired to St. George's, which "is the principal Church of the Iſland of Stamphalia. There one of the "*Papas* preſented to me a book of the Goſpels, in order to diſcover if I "could read their language as well as I ſpake it. Another came and aſked "me, Whether our holy father the Pope were a married man. But I was "ſtill more amuſed by the queſtion of an old woman, who, after looking "ſteadily at me for a conſiderable time, beſought me to tell her if I really "believed in GOD and in the Holy Trinity. Yes, ſaid I, and to give her "full aſſurance of it, I made the ſign of the croſs. O! how glad I am, "ſays ſhe, that you are a Chriſtian! We had ſome doubt of it. On this I "pulled from my boſom the croſs which I wore: The woman, quite "tranſported with joy, exclaimed, Why ſhould we any longer call in "queſtion his being a good Catholic, ſeeing he worſhips the croſs! After "her, another applied to me, of whom I aſked, Whether ſhe had a mind to "confeſs. How! replied ſhe, Would it not be a ſin to confeſs to ſuch "gentlemen as you? No, ſaid I, for though I am French, I confeſs in "Greek. I will go, replied ſhe, and aſk our Biſhop. In a little while

uniting us on Earth, to render us miſerable, it is ſhe who burſts aſunder the chains by which we are held captive. How many calamities has ſhe ſoothed! how many tears

" ſhe returned, perfectly delighted at having obtained his permiſſion. Af-
" ter confeſſion, I gave her an *Agnus Dei*, which ſhe went about and ſhew-
" ed to every one, as a curioſity which they had never ſeen before. I was
" preſently beſet by a multitude of women and children, who preſſed me
" to give them ſome. I anſwered, that thoſe *Agnuſes* were given only to
" ſuch as had confeſſed. In order to gain their point, they inſtantly offer-
" ed to confeſs, and wanted to do ſo by pairs; that is to ſay, a young girl
" with her female confident, a young man with his boſom friend, whom
" they denominate ἀδελφοπείθον, *Adelphopeithon*, confidential brother, al-
" leging as a reaſon, that they had but one heart; and that, therefore,
" there ought to be nothing ſecret between them. It was with difficulty
" I could ſeparate them; however they were under the neceſſity of ſubmit-
" ting."

Some years ago, I happened to be at Dieppe, about the time of the autumnal Equinox; and a gale of wind having ſprung up, as is common at that ſeaſon, I went to look at its effects on the ſea ſhore. It might be about noon. Several large boats had gone out of the harbour in the morning, on a fiſhing expedition. While I was obſerving their manœuvres, I perceived a company of country laſſes, handſome, as the *Cauchoiſes* generally are, coming out of the city, with their long, white head dreſſes, which the wind ſet a flying about their faces. They advanced playfully to the extremity of the pier, which was, from time to time, covered with the ſpray which the daſhing of the waves excited. One of them kept aloof, ſad and thoughtful. She looked wiſtfully at the diſtant boats, ſome of which were hardly perceptible, amidſt a very black Horizon. Her comrades, at firſt, began to rally, with an intention to amuſe her: What, ſaid they, Is your ſweetheart yonder? But finding her continue inflexibly penſive, they called out, Come, come, don't let us ſtop any longer here! Why do you make yourſelf ſo uneaſy? Return, return with us; and they reſumed the road that led to town. The young woman followed them with a ſlow pace, without making any reply, and when they had got nearly out of ſight, behind ſome heaps of pebbles which are on the road, ſhe approached a great crucifix, that ſtands about the middle of the pier, took ſome money out of her pocket, dropped it into the little cheſt at the foot of the croſs; then kneeled down, and with claſped hands, and eyes lifted up to Heaven, put up her prayer. The billows breaking with a deafening noiſe on the ſhore, the wind which agitated the large lanterns of the crucifix, the danger at ſea, the uneaſineſs on the land, confidence in Heaven, gave to the love of this poor country girl, an extent, and a dignity, which the Palaces of the Great cannot communicate to their paſſions.

has ſhe wiped away! how many hopes has ſhe inſpired, when there was no longer room for hope! how many doors of mercy thrown open to the guilty! how many ſupports given to innocence! Ah! when her altars aroſe amidſt our foreſts, enſanguined by the knives of the Druids, how the oppreſſed flocked to them in queſt of an aſylum! How many irreconcileable enemies there embraced with tears! Tyrants, melted to pity, felt, from the height of their towers, their arms drop from their hands. They had known the Empire only of terror, and they ſaw that of charity ſpring up in its room. Lovers ran thither to mingle vows, and to ſwear a mutual affection, which ſhould ſurvive even the tomb. She did not allow a ſingle day to hatred, and promiſed eternity to love. Ah! if this Religion was deſigned only for the conſolation of the miſerable, it was, of courſe, deſigned to promote that of the Human Race!

Whatever may have been ſaid of the ambition of the Church of Rome, ſhe has frequently interpoſed in behalf of ſuffering humanity. I produce an inſtance taken at random, and which I ſubmit to the judgment of the Reader. It is on the ſubject of the African ſlave trade, which is practiſed without ſcruple by all the Chriſtian and maritime Powers of Europe, and condemned by the Court of Rome. "In the ſecond year of his miſſion, *Merolla* was "left alone at Sogno, by the death of the Superior Gen-

It was not long before her tranquillity returned; for all the boats gained the harbour a few hours afterward, without having ſuſtained the ſlighteſt injury.

Religion has been frequently calumniated, by having the blame of our political evils laid to her charge. Hear what *Montagne*, who lived in the midſt of thoſe civil wars, ſays on this ſubject: "Let us confeſs the truth: "Whoever ſhould make a draught from the army, even the moſt legally "embodied, of thoſe who ſerve from the zeal of a religious affection, and "add to them, ſuch as regard only the protection of the laws of their "Country, or the ſervice of the Prince, would find it difficult to make up "of them one complete company of ſoldiers." *Eſſays*, Book ii. chap. xii. page 317.

" eral, whose place Father *Joseph Busseto* went to fill at " the Convent of Angola. Much about the same time, " the Capuchin missionaries received a letter from Car- " dinal *Cibo*, in the name of the sacred College. It con- " tained severe reproaches on the continuation of the sale " of slaves, and earnest remonstrances, to put an end, at " last, to that abominable traffic. But they saw little ap- " pearance of having it in their power to execute the or- " ders of the Holy See, because the commerce of the " Country consists entirely in ivory and slaves.*" All the efforts of the missionaries issued simply in an exclusion of the English from a share of the traffic.

The Earth would be a paradise, were the Christian Religion producing universally its native effects. It is Christianity which has abolished slavery in the greatest part of Europe. It wrested, in France, enormous possessions out of the hands of the Earls and Barons, and destroyed there a part of their inhuman rights, by the terrors of a life to come. But the people opposed still another bulwark to tyranny, and that was the power of the Women.

Our Historians are at pains to remark the influence which some women have had under certain reigns, but never that of the sex in general. They do not write the History of the Nation, but merely the History of the Princes. Women are nothing in their eyes, unless they are decorated with titles. It was, however, from this feeble division of Society, that Providence, from time to time, called forth its principal defenders. I say nothing of those intrepid females, who have repelled, even by arms, the invaders of their country, such as *Joan of Arc*, to whom Rome and Greece would have erected altars : I speak of those who have defended the nation from internal foes, much more formidable still than foreign assailants ; of

* Extract from the *General History of Voyages*, by the Abbé *Prevost*. Book xxii. page 180 : *Merolla*, A. D. 1633.

thoſe who are powerful from their weakneſs, and who have nothing to fear, becauſe they have nothing to hope.

From the ſceptre down to the ſhepherdeſs's crook, there is, perhaps, no country in Europe where women are treated ſo unkindly by the Laws, as in France; and there is no one where they have more power. I believe it is the only kingdom of Europe where they are abſolutely excluded from the throne. In my country, a father can marry his daughters, without giving them any other portion than a chaplet of roſes: At his death, they have all together only the portion of a younger child. This unjuſt diſtribution of property is common to the clown as to the gentleman. In the other parts of the kingdom, if they are richer, they are not happier. They are rather ſold, than given, in marriage. Of a hundred young women, who there enter into the married ſtate, there is not, perhaps, one who is united to her lover. Their condition was even ſtill more wretched in former times. Ceſar, in his Commentaries, informs us, "That the huſband had "the power of life and death over his wife, as well as "over his children; that when a man of noble birth hap- "pened to die, the relations of the family aſſembled; if "there was the ſlighteſt ſhadow of ſuſpicion againſt "his wife, ſhe was put to the torture as a ſlave; and if "found guilty, was condemned to the flames, after a pre- "vious proceſs of inexpreſſible ſuffering.*"

What is ſingularly ſtrange, at that very time, and even before, they enjoyed the moſt unbounded power. Hear what the good *Plutarch* ſays on the ſubject, as he is communicated to us, through the medium of the good *Amyot*. "Before the Gauls had paſſed the Alps, and got poſſeſ- "ſion of that part of Italy which they now inhabit, a vio- "lent and alarming ſedition aroſe among them, which iſ- "ſued in a civil war. But their wives, juſt as the two "armies were on the point of engaging, threw themſelves

* Gallic War, book vi.

" into the intervening ſpace ; and taking up the cauſe of
" their diſſenſion, diſcuſſed it with ſo much wiſdom, and
" decided upon it with ſuch moderation and equity, that
" they gave complete ſatisfaction to both parties. The
" reſult was an unanimous return to mutual benevolence,
" and cordial friendſhip, which reunited not only city to
" city, but family to family : And this with ſo much ef-
" fect, that ever ſince, they invariably conſult their wives,
" on all deliberations, whether reſpecting war or peace ;
" and they ſettle all diſputes and differences with neigh-
" bours and allies, conformably to the advice of the wom-
" en. Accordingly, in the agreement which they made
" with *Hannibal*, when he marched through Gaul, among
" other ſtipulations, this was one, that if the Gauls ſhould
" have occaſion to complain of any injury done them by
" the Carthaginians, the cauſe was to be ſubmitted to the
" deciſion of the Carthaginian Officers and Governors
" ſerving in Spain : And if, on the contrary, the Cartha-
" ginians could allege any ground of complaint againſt
" the Gauls, the matter ſhould be left to the determina-
" tion of the Wives of the Gauls.*"

It will be difficult to reconcile theſe two claſhing authorities, unleſs we pay attention to the reaction of human things. The power of women proceeds from their oppreſſion. The commonalty, as oppreſſed as they, gave them their confidence, as they had given theirs to the people. Both parties were wretched, but miſery attracted them toward each other, and they made a common ſtock of woe. They decided with the greater equity, that they had nothing to gain or loſe. To the women we muſt aſcribe the ſpirit of gallantry, the thoughtleſſneſs, the gaiety, and, above all, the taſte for raillery, which have, at all times, characterized our Nation. With a ſong ſimply, they have oftener than once made our tyrants tremble. Their ballads have ſent many a banner into the field, and put many

* Plutarch, vol. ii. in folio : Virtuous Actions of Women ; page 233.

a battalion to flight. It is by them that ridicule has acquired ſuch a prodigious influence in France, as to have become the moſt terrible weapon which it is poſſible to employ, though it be the armour only of the weak, becauſe women are the firſt to lay hold of it ; and as, from national prejudice, their eſteem is the firſt of bleſſings, it follows, that their contempt muſt be the moſt grievous calamity imaginable.*

Cardinal *Richlieu* having, at laſt, reſtored to Kings the legiſlative authority, thereby ſtripped the Nobility, in a great meaſure, of the power of injuring each other by civil wars ; but he was not able to aboliſh among them the rage for duelling, becauſe the root of this prejudice is in the people, and becauſe edicts have no power over their opinions when they are oppreſſed. The edict of the Prince prohibits the gentleman to go to meet his antagoniſt in ſingle combat, and the opinion of his valet de chambre forces him out. The Nobility arrogate to themſelves all the national honour, but the People determine for them the object of it, and allot its proportions. *Louis* XIV, however, gave back to the People, a part of their natural liberty, by means of his very deſpotiſm. As he hardly ſaw any thing elſe in the world, except himſelf, every one appeared in his eyes nearly equal. It was his wiſh, that all his ſubjects ſhould have permiſſion to contribute their exertions toward the extenſion of his glory, and he rewarded them in proportion as ſuch exertions had promoted this

* A provincial Academy, ſome years ago, propoſed this queſtion as the ſubject for the prize of Saint *Louis ;* " In what manner female education " might be made to contribute toward rendering men better ?" I treated it, and was guilty of committing two faults of ignorance, not to mention others. The firſt was, my preſuming to write on ſuch a ſubject, after *Fenelon* had compoſed an excellent treatiſe on the education of young women ; and the ſecond, to think of arguing for truth in an Academy. The one in queſtion did not beſtow the prize, and recalled its ſubject. All that can be ſaid on this queſtion is, that in every country, women are indebted for their empire, only to their virtues, and to the intereſt which they have always taken in behalf of the miſerable.

end. The desire of pleasing the Prince reduced all ranks to a level. Under that reign, of consequence, were seen multitudes of men of all classes, rendering themselves eminent, each in his several way. But the misfortunes of that great King, and perhaps his policy, having obliged him to descend to the sale of employments, of which the pernicious example had been set him by his predecessors, and which has been extended, since his time, to the meanest offices in the State, this gave the finishing stroke to the ancient preponderancy of the Nobility; but it gave rise, in the Nation, to a power much more dangerous; that of gold. This, this has levelled every rival influence, and triumphed over even the power of women.*

And first, the Nobility have preserved a part of their privileges, in the country; tradespeople possessed of some fortune, do not choose to live there, for fear of being exposed, on the one hand, to insult, and of being confounded, on the other, with the peasantry, by paying tallage and drawing for the militia. They like better to live in small cities, where a multitude of financial employments and revenues enable them to subsist in indolence and listlessness, rather than to vivify the fields which degrade their cultivators. Hence it comes to pass, that small landed estates sink in value, and are year after year falling into the hands of the great proprietors. The rich, who make

* As most men are shocked at abuses, only by seeing them in detail, because every thing great dazzles, and commands respect, I shall here produce a few instances of the effect of venality in the lower orders of Society. All the subaltern conditions which naturally rank under others, of right, are become the superiors, in fact, merely because they are the richer. Accordingly, it is the Apothecary, now a days, who has the employing of the Physician; the Attorney of the Advocate; the Handicraft of the Merchant; the Master mason of the Architect; the Bookseller of the Scholar, even those of the Academy; the Chair hirer in Church, of the Preacher, &c.— I shall say no more. It is easy to see to what all this leads. From this venality alone must ensue the decline of all talents. It is, in fact, abundantly perceptible, on comparing those of the age in which we live, with those of the Age of *Louis* XIV.

the purchaſes of them, parry the inconveniencies to which they are ſubject, either by their perſonal nobility, or by buying off the impoſts under which they labour.

I know well, that a celebrated Farmer general, ſome years ago, greatly cried up the over grown proprietors, becauſe, as he alleged, they could afford to give a better bargain than the ſmaller : But without conſidering whether they could ſell corn cheaper, and all the other conſequences of the *nett produce*, which attempts have been made to eſtabliſh as the alone ſtandard and object of agriculture, nay, of morality ; it is certain, that if any given number of wealthy families were, year after year, to purchaſe the lands which might lie commodiouſly for them, ſuch family bargains would ſpeedily become fatal to the State. I have often been aſtoniſhed, that there is no law in France, to prevent the unbounded accumulation of landed property. The Romans had cenſors, who limited, in the firſt inſtance, the extent of a man's poſſeſſion to ſeven acres, as being ſufficient for the ſubſiſtence of one family. By the word which we tranſlate *acre*, was underſtood as much land as a yoke of oxen could plough in one day. As Rome increaſed in luxury, it was extended to five hundred : But even this Law, though indulgent in the extreme, was ſoon infringed, and the infraction hurried forward the ruin of the Republic.

" Extenſive parks," ſays *Pliny*,* " and unbounded do-" mains, have ruined our own Italy, and the Provinces " which the Romans have conquered : For that which " occaſioned the victories, obtained by *Nero* (the Conſul) " in Africa, was ſimply this, ſix men were in poſſeſſion " of almoſt one half of Numidia, when *Nero* defeated " them." *Plutarch* informs us, that in his time, under *Trajan*, you could not have raiſed three thouſand men in all Greece, which had formerly furniſhed armies ſo numerous ; and that you might have ſometimes travelled a

* Natural Hiſtory, Book xviii. chap. iii. and vi.

whole day, on the high roads, without meeting a human being, except now and then a ſtraggling ſolitary ſhepherd. The reaſon was, Greece had by this time been parcelled out among a few great proprietors.

Conquerors have always met with a very feeble reſiſtance in countries where property is very unequally divided. We have examples of this in all ages, from the invaſion of the Lower Empire by the Turks, down to that of Poland in our own days. Overgrown eſtates deſtroy the ſpirit of patriotiſm, at once, in thoſe who have every thing, and in thoſe who have nothing. "The ſhocks of "corn," ſaid *Xenophon*, "inſpire thoſe who raiſe them "with courage to defend them. The ſight of them in the "fields, is as a prize exhibited in the middle of the theatre, to crown the conqueror."

Such is the danger to which exceſſive inequality of property expoſes a State outwardly; let us take a look of the internal miſchief which it produces. I have heard a perſon of undoubted veracity relate, that an old Comptroller general having retired to his native province, made a very conſiderable purchaſe in land. His eſtate was ſurrounded by about fifty ſmall manors, the annual rent of which might be from fifteen hundred to two thouſand livres each.* The proprietors of theſe were good country gentlemen, who had through a ſucceſſion of generations ſupplied their Country with gallant officers and reſpectable matrons. The Comptroller general, deſirous of extending his landed property, invited them to his caſtle, entertained them magnificently, gave them a taſte for Pariſian luxury, and concluded with an offer of double the value of their eſtates, if they thought proper to diſpoſe of them. They to a man accepted his offer, imagining they were going to double their revenue, and in the hope, no leſs fallacious to a country gentleman, of ſecuring a powerful protector at Court. But the difficulty of laying

* About from ſixty to fourſcore guineas.

out their money to advantage, a taſte for elegant expenſe, inſpired by the ſight of ſums of money ſuch as they never before had in their coffers, in a word, frequent journeys to Paris, and back to the country, ſoon melted away the price of their patrimony. Theſe reſpectable families diſappeared one after another; and thirty years afterward, one of their deſcendants, who could reckon among his anceſtors a long ſucceſſion of captains of dragoons, and knights of St. *Louis*, was found ſcampering over his paternal inheritance, on foot, ſoliciting the place of keeper of a ſalt office, to keep him from ſtarving.

Such are the miſchiefs produced among the citizens of a country, by the exceſſive accumulation of property. Thoſe produced on the ſtate of the lands are not leſs to be deplored. I was, ſome years ago in Normandy, at the houſe of a gentleman in affluent circumſtances, who cultivated, himſelf, a very conſiderable graſs farm, ſituated on a riſing ground, of a very indifferent ſoil. He walked me round his vaſt encloſure, till we came to a large ſpace, completely overrun with moſſes, horſetail and thiſtles. Not a blade of good graſs was to be ſeen. The ſoil, in truth, was at once ferruginous and marſhy. They had interſected it with many trenches, to drain off the water, but all to no purpoſe: Nothing could grow.

Immediately below, there was a ſeries of ſmall farms, the face of which was clothed with graſſy verdure, planted with apple trees in full fruit, and encloſed with tall alder trees. The cows were feeding among the trees of the orchards, while the country girls ſung, as they were ſpinning, around the door. Theſe "native wood notes wild," repeated from diſtance to diſtance, under the ſhade of the trees, communicated to this little hamlet, a vivacity which increaſed ſtill more the nakedneſs, and the depreſſing ſolitude, of the ſpot where we were. I aſked its poſſeſſor, How it came to paſs, that lands ſo contiguous, ſhould preſent an aſpect ſo very different?

" They are," replied he, " of the felf fame nature, and " there formerly were, on this very fpot, fmall houfes " fimilar to thofe which you fee below. I made a pur- " chafe of them, but fadly to my lofs. Their late inhab- " itants having abundance of leifure, and a fmall compafs " of ground on their hands, cleared away the moffes, the " thiftles, manured it ; up fprung the grafs. Had they " a mind to plant ? They dug holes, they removed the " ftones, and filled them with good mould, which they " went to collect from the bottom of the ditches, and a- " long the highway's fide. Their trees took root and " profpered. But all thefe neceffary operations coft me " incredible time and expenfe. I never was able to make " out the common intereft of my money."

I am bound in juftice to remark, that this wretched fteward, but excellent gentleman, in every fenfe of that word, was at that very time relieving, by his charity, moft of thofe ancient farmers, now difabled to earn a livelihood. Here, then, is another inftance of both men and lands rendered ufelefs, by the injudicious extenfion of property. It is not upon the face of vaft domains, but into the bofom of induftry, that the FATHER of Mankind pours out the precious fruits of the Earth.

I could eafily demonftrate, that enormous property is the principal caufe of the multiplication of the poor all over the kingdom, for the very reafon which has procured it the eulogium of many of our Writers, namely, that it fpares men the labours of agriculture. There are many places, where there is no employment to give the peafantry during a confiderable part of the year ; but I fhall infift only on their wretchednefs, which feems to increafe with the riches of the diftrict where their lot is caft.

The diftrict of Caux is the moft fertile country which I know in the World. Agriculture, on the great fcale, is there carried to the height of perfection. The deepnefs of the foil, which, in fome places, extends to five and fix feet ; the manure fupplied from the ftratum of marl over

which it is raiſed, and that of the marine plants on its ſhores, which are ſpread over its ſurface, concur toward clothing it with the nobleſt vegetables. The corn, the trees, the cattle, the women, the men are there handſomer and more vigorous than any where elſe. But as the laws have aſſigned, in that province, in every family, two thirds of the landed property to the firſt born, you find there unbounded affluence, on the one hand, and extreme indigence, on the other.

I happened one day to be walking through this fine country; and admired, as I went, its plains ſo well cultivated, and ſo extenſive, that the eye loſes itſelf in the unbounded proſpect. Their long ridges of corn, humouring the undulations of the plain, and terminating only in villages, and caſtles ſurrounded with venerable trees, preſented the appearance of a Sea of verdure, with here and there an iſland riſing out of the Horizon. It was in the month of March, and very early in the morning. It blew extremely cold from the North Eaſt. I perceived ſomething red running acroſs the fields, at ſome diſtance, and making toward the great road, about a quarter of a league before me. I quickened my pace, and got up in time enough to ſee that they were too little girls in red jackets and wooden ſhoes, who, with much difficulty, were ſcrambling through the ditch which bounded the road. The talleſt, who might be about ſix or ſeven years old, was crying bitterly. "Child," ſaid I to her, "What makes you cry? and, Whither are you "going at ſo early an hour?" "Sir," replied ſhe, "my "poor mother is very ill. There is not a meſs of broth "to be had in all our pariſh. We are going to that "church in the bottom, to try if the Curé of this par-"iſh can find us ſome. I am crying becauſe my little "ſiſter is not able to walk any farther." As ſhe ſpake, ſhe wiped her eyes with a bit of canvas, which ſerved her for a petticoat. On her raiſing up the rag to her face, I could perceive that ſhe had not the ſemblance of a ſhift.

The abject misery of these children, so poor, in the midst of plains so fruitful, wrung my heart. The relief which I could administer to them was small indeed. I myself was then on my way to see misery in other forms.

The number of wretches is so great, in the best cantons of this province, that they amount to a fourth, nay, to a third of the inhabitants in every parish. The evil is continually on the increase. These observations are founded on my personal experience, and on the testimony of many parish ministers of undoubted veracity. Some Lords of the Manor order a distribution of bread to be made, once a week, to most of their peasantry, to eke out their livelihood. Ye stewards of the public, reflect that Normandy is the richest of our provinces; and extend your calculations, and your proportions, to the rest of the Kingdom! Let the morality of their financier supersede that of the Gospel; for my own part, I desire no better proof of the superiority of Religion to the reasonings of Philosophy, and of the goodness of the national heart to the enlarged views of our policy, than this, that notwithstanding the deficiency imputable to our laws, and our errors in almost every respect, the State continues to support itself, because charity and humanity almost constantly interpose in aid of Government.

Picardy, Brittany, and other provinces, are incomparably more to be pitied than Normandy. If there be twentyone millions of persons in France, as is alleged, there must be then, at least, seven millions of paupers. This proportion by no means diminishes in the cities, as may be concluded from the number of foundlings in Paris, which amounts, one year with another, to six or seven thousand, whereas the number of children, not abandoned by their parents, does not exceed, in that city, fourteen or fifteen thousand. And it is reasonable to suppose, that among these last, there must be a very considerable proportion, the progeny of indigent families. The others are partly, it must be admitted, the fruit of libertinism; but

irregularity in morals proves equally the misery of the people, and even more powerfully, as it constrains them at once to renounce virtue, and to stifle the very first feelings of Nature.

The spirit of finance has accumulated all these woes on the head of the People, by stripping them of most of the means of subsistence; but, what is infinitely more to be regretted, it has sapped the foundations of their morality. It no longer esteems or commends any but those who are making a fortune. If any respect be still paid by it, to talents and virtue, this is the only reason, it considers these as one of the roads to wealth. Nay, what, in the phrase of the world is called good company, has hardly any other way of thinking. But I should be glad to know, whether there be any honourable method of making a fortune, for a man who has not already got money, in a country where every thing is put up to sale. A man must, at least, intrigue, unite himself to a party and flatter it, secure puffers and protectors; and for this purpose he must be dishoneſt, corrupt, adulate, deceive, adopt another man's passions, good or bad, in a word, let himself down in one shape or another. I have seen persons attain every variety of situation; but, I speak it without reserve, whatever praise may have been bestowed on their merit, and though many of them really had merit, I never saw any one, even of the strictest honour, raise himself, and preserve his situation, but by the sacrifice of some virtue.

Let us now look at the reactions of these evils. The people usually balance the vices of their oppressors by their own. They oppose corruption to corruption. From the prolific womb of vulgar debauchery issues a monstrous swarm of buffoons, comedians, dealers in luxury of every sort, nay, even men of letters, who, to flatter the rich, and save themselves from indigence, extend dissipation of manners and of opinions to the remotest ex-

tremity of Europe. In the claſs of the unmarried vulgar, we find the moſt powerful bulwark oppoſed to rank and wealth. As this is a very numerous body, and comprehends not only the youth of both ſexes, who, with us, do not form early marriages, but an infinite number of men beſides, who, from peculiarity of condition, or want of fortune, are deprived, as youth is, of the honours of Society, and of the firſt pleaſures of Nature, they conſtitute a formidable aſſociation, which has all reputations at their mercy, together with the power of diſturbing the peace of all families. Theſe are the perſons who retail, for a dinner, that inexhauſtible collection of anecdotes, favourable or unfavourable, which are, in every inſtance, to regulate public opinion.

It is not in the power of a rich man to marry a handſome wife, and enjoy himſelf at home in his own way; thoſe perſons lay him under the neceſſity, unleſs he would be laughed at, that is, under pain of the ſevereſt evil which can befal a Frenchman, of making his wife the central point of all faſhionable ſociety; he muſt exhibit her at all public places; and adopt the manners which his plebeian dictators think proper to preſcribe, however contradictory they may be to Nature, and however inconſiſtent with conjugal felicity. While, as a regularly embodied army, they diſpoſe of the reputation and the pleaſures of the rich, two of the columns attack their fortune in front, in two different ways. The one employs the method of intimidation, and the other that of ſeduction.

I ſhall not here confine my reflections to the power and wealth gradually acquired by ſeveral religious orders, but extend them to their number in general. Some politicians pretend, that France would become too populous, were there no convents in it. Are England and Holland overpeopled, where there is no ſuch thing? It betrays, beſides, little acquaintance with the reſources of Nature. The more inhabitants any country contains, the more productive it is. France could maintain, perhaps,

four times more people than it now contains, were it, like China, parcelled out into a great number of ſmall freeholds. We muſt not form our judgment of its fertility from its immenſe domains. Theſe vaſt, deſerted diſtricts yield only one crop in two years, or, at moſt, two in three. But with how many crops, and how many men, are ſmall tenements covered! Obſerve, in the vicinity even of Paris, the meadow land of St. Gervais. The ſoil is, in general, of a middling quality; and notwithſtanding, there is no ſpecies of vegetable which our Climate admits of, but what the induſtry of cultivation is there capable of producing. You ſee at once fields of corn, meadow grounds, kitchen gardens, flower plots, fruit trees and ſtately foreſt trees. I have ſeen there, in the ſame field, cherry trees growing in potatoe beds; vines clambering up along the cherry trees, and lofty walnut trees riſing above the vines; four crops, one above another, within the earth, upon the earth, and in the air. No hedge is to be ſeen there, ſeparating poſſeſſion from poſſeſſion, but an inter communication worthy of the Golden Age.

Here a young ruſtic, with a baſket and ladder, mounts a fruit tree, like another *Vertumnus*; while ſome young girl, in a winding of the adjoining valley, ſings her ſong loud enough to be heard by him, preſenting the image of another *Pomona*. If cruel prejudices have ſtricken with ſterility and ſolitude a conſiderable part of France, and henceforth allot the poſſeſſion of a great Kingdom to a little handful of proprietors, how is it that, inſtead of Founders of new orders, Founders of new colonies do not ariſe among us, as among the Egyptians and the Greeks? Shall France never have to boaſt of an *Inachus*, and of a *Danaüs*? Why do we force the African tribes to cultivate our lands in America, while our own peaſantry is ſtarving for want of employment at home? Why do we not tranſport thither our miſerable poor by families; children, old men, lovers, couſins, nay, the very church-

es and ſaints of our villages, that they may find in thoſe far diſtant lands, the loves and the illuſions of a country.

Ah! had liberty and equality been invited to thoſe regions, where Nature does ſo much with moderate cultivation, the cottages of the New World would, at this day, have been preferable to the palaces of the Old. Will another Arcadia never ſpring up in ſome corner of the Earth? When I imagined I had ſome influence with men in power, I endeavoured to exert it in projects of this nature; but I have never had the felicity of falling in with a ſingle one, who took a warm intereſt in the happineſs of Mankind. I have endeavoured to trace, at leaſt, the plan of them, as a legacy to thoſe who ſhall come after me, but the clouds of calamity have ſpread a gloom over my own life; and the poſſibility of enjoying happineſs, even in a dream, is no longer my portion.

Politicians have conſidered war itſelf as neceſſary to a State, becauſe, as they pretend, it takes off the ſuperflux of Mankind. In general, they have a very limited knowledge of Human Nature. Independent of the reſources of the ſubdiviſion of property into ſmall allotments, which every where multiply the fruits of the Earth, we may reſt aſſured, that there is no country but what has the means of emigration within its reach, eſpecially ſince the diſcovery of the New World. Beſides. there is not a ſingle State, even among thoſe which are beſt peopled, but what contains immenſe tracts of uncultivated land. China and Bengal are, I believe, the countries on the Globe which contain moſt inhabitants. In China, nevertheleſs, are many and extenſive deſerts, amidſt its fineſt provinces, becauſe avarice attracts thoſe who ſhould cultivate them, to the vicinity of great rivers, and to the cities, for the conveniency of commerce. Many enlightened travellers have made this obſervation.

Hear what that honeſt Dutchman, *Walter Schouten*, ſays of the deſerts of Bengal. "Toward the South, a-

" long the ſea coaſt, at the mouth of the Ganges, there is " a very conſiderable extent of territory, deſert and un- " cultivated, from the indolence and inactivity of the in- " habitants, and alſo from the fear which they are under " of the incurſions of thoſe of Arracan; and of the croc- " odiles and other monſters which devour men, lurking " in the deſerts, by the ſides of brooks, of rivers, of mo- " raſſes, and in caverns.*" Obſtacles very inconſiderable, it muſt be allowed, in a Nation where Fathers ſometimes ſell their children for want of the means of ſupporting them! *Bernier*, the phyſician, remarks likewiſe, in his travels over the Mogul Empire, that he found a great many, but deſerted iſlands, at the mouth of the Ganges.

We muſt aſcribe, in general, to the exceſſive number of bachelors, that of profligate women; which univerſally are in exact proportion to each other. This evil, too, is the effect of a natural reaction. As the two ſexes are born and die in equal numbers, every man comes into the world, and leaves it, in company with his female. Every man, therefore, who prefers celibacy to the married ſtate, dooms a female, at the ſame time, to a ſingle life. The eccleſiaſtical order robs the ſex of ſo many huſbands; and the ſocial order deprives them of the means of ſubſiſtence. Our manufactures and machinery, ſo ingeniouſly induſtrious, have ſwallowed up almoſt all the arts by which they were formerly enabled to earn a livelihood. I do not ſpeak of thoſe who knit ſtockings, embroider, weave, &c. employments which, in better times, ſo many worthy matrons followed, but which are now entirely engroſſed by perſons bred to the buſineſs, but we have, forſooth! taylors, ſhoemakers, male hairdreſſers for the ladies. We have men milliners, dealers in linen, gauze, muſlin, gum flowers. Men are not aſhamed to aſſume to themſelves the eaſy and commodious oc-

* *Walter Schouten*'s Voyage to the Eaſt Indies, vol. ii. page 154.

cupations, and to leave to the poor women, the rougher and more laborious. We have female dealers in cattle, in pigs, driving through fairs on horſeback: There are others who vend bricks, and navigate barges, quite embrowned with the ſun; ſome labour in quarries.

We meet multitudes, in Paris, ſweating under an enormous load of linen, under heavy water pails, blacking ſhoes on the quays; others yoked, like beaſts, to little carts. Thus the ſexes unſex themſelves; the men dwindle into females, the women harden into men. The greateſt part of females, in truth, would rather turn their charms to account than their ſtrength. But what miſchief is every day produced by women of the town! What conjugal infidelity, what domeſtic plunder, what quarrelling, beating, duelling, do they occaſion! Scarcely has night begun to ſpread her curtain, when every ſtreet is inundated with them; every place of reſort ſwarms with theſe unhappy creatures; at every corner they lie in wait for their prey. Others of them, known by the name, now of ſome conſideration among the vulgar, of *kept miſtreſſes*, loll it away to the opera and playhouſe, in magnificent equipages. They take the lead, at the balls and feſtivals of the better ſort of our trades folks. For them, in part, ariſe in the ſuburbs, in the midſt of gardens in the Engliſh taſte, gay alcoves in the Egyptian ſtile. Every one of them bent on melting down a fortune. It is thus GOD puniſhes the oppreſſors of a People, by the oppreſſed. While the rich are dreaming that they are expending their ſubſtance in tranquillity, men ſpringing from the dregs, plunder them in their turn by the torments of opinion: If they are ſo fortunate as to eſcape theſe, fall they muſt into the hands of abandoned women; who, if they ſhould happen to miſs the fathers, make ſure of indemnifying themſelves upon the children.

An attempt has been made, for ſome years paſt, to give encouragement to virtue, in our poor country girls, by feſtivals called *Roſieres* (roſe feaſts;) for as to thoſe who

are rich, and our city dames in buſineſs, the reſpect which they owe to their fortune, permits them not to put themſelves on a level with the female peaſantry, even at the foot of the altar. But you who beſtow crowns on virtue, are you not afraid of blighting the prize by your touch? Know you not that among Nations who really honoured virtue, the Prince only, or the voice of the Country, preſumed to confer the crown? The proconſul *Apronius* refuſed the civic crown to a ſoldier who had merited it, becauſe he conſidered this privilege as belonging only to the Emperor. *Tiberius* beſtowed it, finding fault with *Apronius* for not having done it, in quality of Proconſul.* Have you been informed in what reſpect virginity was held among the Romans? The Veſtals had the maces of the Prætors borne before them. We have mentioned, on a former occaſion, that their preſence, merely, beſtowed a pardon on the criminal going to execution, provided, however, the Veſtals could affirm, that they did not paſs that way expreſsly for the purpoſe. They had a particular bench allotted them at the public feſtivals; and ſeveral Empreſſes requeſted, as the higheſt honour they could aſpire to, permiſſion to ſit among them. And our Paris trades people, too, crown our ruſtic Veſtals!† Noble and generous effort! They beſtow a garland of roſes upon indigent virtue, in the country; while, in the city, vice flaunts about glittering with diamonds.

On the other hand, the puniſhments of guilt appear to me as injudiciouſly adjuſted as the rewards of virtue. We too frequently hear called aloud in our ſtreets theſe terrible words, *The ſentence of condemnation!* but never, *The ſentence of reward.* Crimes are repreſſed by infamous

* *Annals of Tacitus*, book iii. year 6.

† They *condeſcend*, likewiſe, to permit them to eat at the ſame table with themſelves, for that day. See the journals of the feſtivity, which break out into raptures on this occaſion.

puniſhments. A ſimple brand inflicted, inſtead of reforming the criminal, frequently plunges him deeper in guilt, and not ſeldom drives his whole family headlong into vicious courſes. Where, let me aſk, can an unhappy wretch find refuge, who has been publicly whipped, branded and drummed out? Neceſſity has made him a thief; indignation and deſpair will hurry him on to murder. His relations, diſhonoured in the public eſtimation, abandon their home, and become vagabonds. His ſiſters give themſelves up to proſtitution.

Theſe effects of the fear, which the hangman impreſſes on the lower orders, are conſidered as prejudices which are ſalutary to them. But they produce, as far as I am able to judge, unſpeakable miſchief. The vulgar extend them to actions the moſt indifferent, and convert them into a bitter aggravation of miſery. Of this I witneſſed an inſtance on board a veſſel, in which I was a paſſenger, on my return from the Iſle of France. I obſerved that not one of the ſailors would eat in company with the cook of the ſhip; they hardly deigned even to ſpeak to him. I enquired the reaſon of this at the Captain. He told me, that being at Pégu, about ſix months before, he had left this man on ſhore, to take charge of a warehouſe which the people of the country had lent him. When night came on, theſe people locked the door of it, and carried home the key with them. The ſtorekeeper being on the inſide, and not having it in his power to go out to diſburthen nature, was under the neceſſity of eaſing himſelf in a corner. Unfortunately, this warehouſe was likewiſe a church. In the morning the proprietors came and opened the door; but obſerving that the place was polluted, they fell upon the poor ſtorekeeper, with loud exclamations, bound him faſt, and delivered him over to the executioner, who would have immediately hanged him, unleſs the Captain of the veſſel, ſeconded by a Portugueſe Biſhop and the King's brother, had haſtened to interpoſe in his behalf, and ſaved him from the gallows. From

that moment, the ſailors conſidered their countryman as degraded, from having paſſed, as they alleged, through the hands of the hangman.

This prejudice did not exiſt among either the Greeks or Romans. There are no traces of it among the Turks, the Ruſſians and the Chineſe. It does not proceed from a ſenſe of honour, nor even from the ſhame of guilt; it is attached only to the ſpecies of puniſhment. The decapitation of a man for the crimes of treaſon and perfidy, or being ſhot for deſertion, are conſidered as no ſtigma on the family of the perſon thus puniſhed. The people, ſunk below their level, deſpiſe that only which is peculiar to themſelves, and ſhew no pity in their deciſions, becauſe they are miſerable.

The wretchedneſs of the lower orders is, therefore, the principal ſource of our phyſical and moral maladies. There is another, no leſs fertile in miſchief, I mean the education of children. This branch of political economy engaged, among the Ancients, the attention of the greateſt Legiſlators. The Perſians, the Egyptians and the Chineſe, made it the baſis of their Government. On this foundation *Lycurgus* reared the fabric of the Spartan Republic. We may even go ſo far as to affirm, that wherever there is no national education, there is no durable legiſlation. With us, education has no manner of reference to the conſtitution of the State. Our moſt celebrated Writers, ſuch as *Montagne*, *Fenelon*, *John James Rouſſeau*, have been abundantly ſenſible how defective our police is, in this reſpect: But deſpairing, perhaps, of effecting a reformation, they have preferred offering plans of private and domeſtic education, to patching up the old method, and adapting it to all the abſurdities of the preſent ſtate of Society. For my own part, as I am tracing up our evils to their ſource, only in the view of exculpating Nature, and in the hope that ſome favoured genius may one day ariſe to apply a remedy, I find myſelf farther engaged,

to examine into the influence of education on our particular happineſs, and on that of our Country in general.

Man is the only ſenſible being who forms his reaſon on continual obſervations. His education begins with life, and ends only with death. His days would fleet away in a ſtate of perpetual uncertainty, unleſs the novelty of objects, and the flexibility of his brain gave, to the impreſſions of his early years, a character not to be effaced. At that period of life are formed the inclinations and the averſions which influence the whole of our exiſtence. Our firſt affections are likewiſe the laſt. They accompany us through the events with which human life is variegated. They reappear in old age, and then revive the ſenſibilities of childhood with ſtill greater force than thoſe of mature age. Early habits have an influence even on animals, to ſuch a degree, as to extinguiſh their natural inſtinct. *Lycurgus* exhibited a ſtriking example of this to the Lacedemonians, in the caſe of two hounds taken from the ſame litter, in one of which education had completely triumphed over Nature. But I could produce ſtill ſtronger inſtances in the Human Species, in which early habit is found triumphant, ſometimes, even over ambition. Hiſtory furniſhes innumerable examples to this purpoſe; I beg leave to produce one which has not yet obtained a place in the hiſtoric page, and which is, apparently, of no great importance, but is highly intereſting to myſelf, becauſe it brings to my recollection perſons who were juſtly dear to me.

When I was in the Ruſſian ſervice, I frequently had the pleaſure of dining at the table of his Excellency M. *de Villebois*,* Grand Maſter of Artillery, and General of

* *Nicolas de Villebois* was a native of Finland, but deſcended from a French family originally from Brittany. In the battle of Frankfort, he turned the tide of victory decidedly in favour of Ruſſia, by charging the Pruſſians at the head of a regiment of fuſileers of the artillery, of which he was then Colonel. This action, joined to his perſonal merit, procured him the blue ribbon of St. Andrew, and ſoon after the place of Grand Maſter of the Ordnance, which he held at the time of my arrival in Ruſſia.

the corps of engineers to which I belonged. I obſerved that there was every day ſerved up to him a plate of ſomething gray coloured, I could not tell what, and ſimilar, in form, to ſmall pebbles. He ate very heartily of this diſh, but never preſented it to any one at table; though his entertainments were always given in the moſt elegant ſtyle, and every other diſh indiſcriminately recommended to his gueſts, of whatever rank. He one day perceived me looking attentively at his favourite meſs; and aſked, with a ſmile, if I would pleaſe to taſte it. I accepted his offer, and found that it conſiſted of little balls of curdled milk, ſalted, and beſprinkled with aniſe ſeeds, but ſo hard and ſo tough, that it coſt me inexpreſſible exertion to force my teeth through them, but to ſwallow them down, was abſolutely impoſſible.

Though his credit was then on the decline, he procured me an admiſſion into the ſervice of her Imperial Majeſty *Catharine* II, and did me the honour of preſenting me to her as one of the officers of his corps of engineers. He was making arrangements, in concert with General *Daniel de Boſquet*, Commander in Chief of the corps of engineers, for my farther promotion in it. They both employed all their powers of perſuaſion to retain me in that ſervice, and endeavoured to render it agreeable by every affectionate and polite attention, and by aſſurances of an honourable and advantageous eſtabliſhment. But the love which I bare to my country, in whoſe ſervice I had previouſly engaged, and to which I ſtill wiſhed to devote my ſervices, a fond wiſh, fed with vain hopes, by men of very high character, induced me to perſiſt in demanding my diſmiſſion, which I obtained, with Captain's rank, in 1765.

On leaving Ruſſia, I made an effort to ſerve my country, at my own expenſe, by joining that party in Poland which France had eſpouſed. There I was expoſed to very great riſks, having been made priſoner by the Polonese Ruſſian party. On my return to Paris, I preſented memorials reſpecting the ſtate of things in the North, to the Miniſter of Foreign Affairs, in which I predicted the future partition of Poland, by the Powers contiguous. This partition actually took place ſome years afterward. I have ſince endeavoured to deſerve well of my country by my ſervices, both military, in the Weſt Indies, in my capacity of Captain of the royal engineers, and literary, in France, and I add, with confidence, by my conduct likewiſe: But I have not, hitherto, enjoyed the felicity of experiencing, in my fortune, that ſhe has been pleaſed graciouſly to accept the various ſacrifices which I ſaw it my duty to make to her.

" Theſe are," ſaid the Grand Maſter to me, " the " cheeſes of my native country. It is a taſte which I " acquired in my boyiſh days. I was accuſtomed, when " a child, to feed with the peaſants on theſe coarſe milk " beverages. When I am travelling, and have got to a " diſtance from great towns, on coming near a country " village, I ſend on my ſervants and carriages before; " and then my great delight is to go unattended, and care- " fully muffled up in my cloak, into the houſe of the firſt " peaſant on the road, and devour an earthen pot full of " curdled milk, ſtuffed full of brown bread. On my laſt " journey into Livonia, on one of theſe occaſions, I met " with an adventure, which amuſed me very highly. " While I was breakfaſting in this ſtyle, in comes a man " ſinging cheerly, and carrying a parcel on his ſhoulder. " He ſat down by me, and deſired the landlord to give " him a breakfaſt ſuch as mine. I aſked this traveller ſo " gay, whence he came, and which way he was going. *I* " *am a ſailor*, ſays he, *and juſt arrived from a voyage to* " *India; I diſembarked at Riga, and am on my return to* " *Herland, which is my native country, where I have not* " *been theſe three years. I ſhall ſtay there till I have ſpent* " *theſe hundred crowns*, pulling out a leathern bag, and " chinking the money. I aſked him ſeveral queſtions a- " bout the countries he had ſeen, which he anſwered ve- " ry pertinently. *But*, ſaid I to him, *What will you do,* " *when your hundred crowns are gone?—Oh!* ſays he, *I* " *will return to Holland, embark again for India, earn a-* " *nother bag of crowns, come back and enjoy myſelf in* " *Herland, in Franconia, my native country.*" The good " humour and thoughtleſſneſs of this fellow diverted me " exceedingly," continued the Grand Maſter. " To con- " feſs the truth, I envied his ſituation."

Wiſe Nature, in giving ſo much force to early habits, intended that our happineſs ſhould depend on thoſe, who are moſt concerned to promote it, that is, our parents; for on the affections which they, at that ſeaſon, inſpire,

depends the affection which we are one day to be called upon to return. But, with us, as ſoon as the child is born, he is transferred to a mercenary nurſe. The firſt bond which Nature intended ſhould attach him to his parents, is burſt aſunder before it is formed. The day will come, perhaps, when he will behold the funeral proceſſion of thoſe who gave him birth, leave his father's door, with as much indifference as they ſaw his cradle turned out. He may be recalled home, it is true, at the age when the graces, when innocence, when the neceſſity of having an object of affection ſhould fix him there forever. But he is permitted to taſte thoſe ſweets only to make him feel, in a little while, the bitterneſs of having them taken away from him. He is ſent to ſchool; he is put to board far from home. There he is doomed to ſhed tears which no maternal hand is ever more to wipe away. It is there he is to form friendſhips with ſtrangers, pregnant with regret and repentance; and there he muſt learn to extinguiſh the natural affections of brother, of ſiſter, of father, of mother, which are the moſt powerful, and the ſweeteſt chains by which Nature attaches us to our Country.

After this firſt horrid outrage committed on his young heart, others equally violent are offered to his underſtanding. His tender memory muſt be loaded with ablatives, with conjunctions, with conjugations. The bloſſom of human life is ſacrificed to the metaphyſical jargon of a dead language. What Frenchman could ſubmit to the torture of learning his own in that manner? And if there be thoſe who have exerciſed ſuch laborious patience, Do they ſpeak better than perſons who have never endured ſuch drudgery? Who writes beſt, a lady of the Court, or a pedantic grammarian? *Montagne*, ſo repleniſhed with the ancient beauties of the Latin tongue, and who has given ſo much energy to our own, congratulates himſelf on *never having underſtood what the word vocative meant.* To learn to ſpeak by grammar rules, is the ſame thing with learning to walk by the laws of equilibrium. It is

practice that teaches the grammar of a language, and the paſſions are our beſt inſtructors in the rhetoric of it. It is only at the age, and in places where they expand, that the beauties of *Virgil* and *Horace* are felt, a thing which our moſt celebrated college tranſlators never dreamt of.

I recollect that when I was at ſchool, I was for a long time ſtunned, as other boys are, by a chaos of barbarous terms; and that, when I happened to catch a glimpſe, in the Author I was ſtudying, of any ſtroke of genius which met my reaſon, or any ſentiment which made its way to my heart, I kiſſed the book for joy. It filled me with aſtoniſhment to find that the Ancients had common ſenſe. I imagined that there muſt be as great a difference between their reaſon and mine, as there was in the conſtruction of our two languages. I have known ſeveral of my ſchool-fellows ſo diſguſted at Latin Authors, by thoſe college explanations, that, long after they had bidden farewel to the ſeminary, they could not bear to hear their names mentioned. But when they came to be formed by acquaintance with the world, and by the operation of the paſſions, they became perfectly ſenſible of their beauties, and reſorted to them as the moſt delightful of all companions. It is thus that children, with us, become ſtupified; and that an unnatural conſtraint is uſed to repreſs a period of life all fire and activity, transforming it into a ſtate, ſad, ſedentary, and ſpeculative, which has a diſmal influence on the temperament, by ingrafting maladies without number upon it. But theſe, after all, amount only to the production of languor, and phyſical evils. But they are trained to vice; they are decoyed into ambition under the guiſe of emulation.

Of the two paſſions which are the moving principles of the human heart, namely, love and ambition, the laſt is by far the moſt durable, and the moſt dangerous. Ambition is the laſt that dies in the aged, and our mode of education puts it prematurely in motion in the young. It would be infinitely better to aſſiſt them in directing

their early tender affections toward an amiable object. Moſt are deſtined, one time or another, to feel the power of this gentle paſſion. Nature has, beſides, made it the firmeſt cement of Society. If their age, or rather, if our financial manners forbid a commerce of early love, their young affections ought to be directed into the channel of friendſhip, and thus, as *Plato* propoſes in his Republic, and as *Pelopidas* affected at Thebes, battalions of friends might be formed among them, at all ſeaſons prepared to devote themſelves in the ſervice of their Country.*

But ambition never riſes except at the expenſe of another. Give it whatever ſpecious name you pleaſe, it is ever the ſworn enemy of all virtue. It is the ſource of vices the moſt dangerous and deteſtable; of jealouſy, of hatred, of intolerance and cruelty; for every one is diſpoſed to gratify it in his own way. It is forbidden to all men by Nature and Religion, and to the greateſt part of ſubjects by Government. In our colleges, a lad is brought up to empire, who muſt be doomed, for life, to ſell pepper. The young people, the hope of a great Nation, are there employed, for, at leaſt, ſeven years, in learning to be the firſt in the art of declamation, of verſifica-

* *Divide & impera* (divide and govern) is a ſaying, I believe, of *Machiavel's*. Judge of the goodneſs of this maxim, from the miſerable ſtate of the country which gave it birth, and where it has been reduced into practice.

Children, at Sparta, were taught only to obey, to love virtue, to love their country, and to live in the moſt intimate union, till they were divided in their ſchools into two claſſes, of *Lovers* and *Beloved*. Among the other Nations of Greece, education was arbitrary; it conſiſted of a great variety of exerciſes, of eloquence, of wreſtling, of running, of pythian, of olympic, of iſthmian prizes, &c. Theſe frivolities foſtered undue partialities. Lacedemon gave Law to them all: And while the firſt, on going to engage in the battles of their country, needed the ſtimulus of pay, of harangues, of trumpets, of clarions, to excite their courage, it was neceſſary, on the contrary, to repreſs the ardor of the Lacedemonians. They went to battle, unſtimulated by mercenary conſiderations, by eloquent addreſſes, to the ſound of the flute, and ſinging, in one grand concert, the hymn of the two twin brothers, *Caſtor* and *Pollux*.

tion, of prattling. For one who ſucceeds in theſe trivial purſuits, how many thouſands loſe, at once, their health and their Latin!

It is emulation, we are told, which awakens talents. It would be an eaſy taſk to demonſtrate, that the moſt celebrated Writers, in every walk of literature, never were brought up at college, from *Homer*, who was acquainted with no language but his own, down to *John James Rouſſeau*, who was a very indifferent Latin ſcholar. How many young men have made a brilliant figure in the run of the claſſes, who were by and by totally eclipſed in the vaſt ſphere of Literature! Italy is crowded with colleges and academies; but, Can ſhe boaſt, at this day, of ſo much as one man eminently diſtinguiſhed? Do we not ſee there, on the contrary, talents diſtracted, by ill aſſorted ſocieties, by jealouſies, by cabals, by intrigues, and by all the reſtleſſneſs of ambition, become enfeebled, and melt away?

I think I am able to perceive ſtill another reaſon of this decline; it is, that nothing is ſtudied in thoſe ſeminaries but the methods and forms of learning, or what, in the Painter's phraſe, is called *manner*. This ſtudy, by fixing us in the track of a maſter, forces us out of the path of Nature, which is the ſource of all talents. Look to France, and obſerve what are the arts brought there to the higheſt perfection; and you will find that they are thoſe for which there is no public ſchool, no prize, no academy: Such as milliners, jewellers, hair dreſſers, cooks, &c. We have, it is true, men of high reputation in the liberal arts, and in the ſciences; but theſe men had acquired their talents before they were introduced into academies. Beſides, Will any one venture to affirm, that they are equal to thoſe of preceding ages, who appeared before academies exiſted? After all, admitting that talents are formed in colleges, they would not for that be leſs prejudicial to the Nation; for it is of inconceivably more importance that a Country ſhould poſſeſs virtue rather than talents, and

men happy, rather than men renowned. A treacherous glare covers the vices of thoſe who ſucceed in our Colleges. But in the multitude who never ſucceed, ſecret jealouſies, malicious whiſpers, mean flatteries, and all the vices of a negative ambition are already in a ſtate of fermentation, and ready to burſt forth, at the command of their leader, upon the World.

While depravity is thus taking poſſeſſion of the hearts of children, ſome branches of education go directly to the perverſion of their reaſon. Theſe two abuſes always walk hand in hand. Firſt, they are taught to deduce falſe conſequences. The Regent informs them that *Jupiter*, *Mercury* and *Apollo*, are gods : The Pariſh miniſter tells them that they are demons. The profeſſor aſſures his pupil, that *Virgil*, who has ſo nobly ſupported the doctrine of a Providence, is got, at leaſt, to the Elyſian Fields, and that he enjoys in this world the eſteem of all good men : The Curé informs him, that this ſame *Virgil* was a pagan, and muſt certainly be damned. The Goſpel holds a contradictory language in another reſpect ; it recommends to the young man to be the laſt ; his college urges him by all means to be the firſt : Virtue commands him to deſcend ; education bids him riſe. And what renders the contradiction ſtill more glaring to the poor lad, it frequently proceeds, eſpecially in the country, from one and the ſame mouth : For the ſame good Eccleſiaſtic, in many places, teaches the claſſics in the morning, and the catechiſm at night.

I can very eaſily conceive how the matter may be arranged, and contradictions reconciled, in the head of the Regent ; but they muſt of neceſſity confound and perplex all the ideas of the Learner, who is not paid for comprehending, as the other is, for retailing them.

The caſe is much worſe, when ſubjects of terror are employed, where nothing ought to be adminiſtered but conſolation : When application is made to them, for example, at the age of innocence, of the woes pronounced by

JESUS CHRIST, againſt the Phariſees, the doctors, and the other tyrants of the Jewiſh nation; or when their tender organs are ſhocked by certain monſtrous images ſo common in our churches. I knew a young man who, in his infancy, was ſo terrified with the dragon of St. Marguerite, with which his preceptor had threatened him in the village church, that he actually fell ſick of horror, believing that he ſaw the monſter conſtantly at his pillow, ready to devour him. His father, in order to quiet his diſturbed imagination, was under the neceſſity of appearing ſword in hand to attack the dragon, and of pretending that he had killed him. Thus, as our method is, one error was driven out by another. When grown up, the firſt uſe which he made of his reaſon was to reflect, that the perſons entruſted with the formation of that faculty, had impoſed upon him twice.

After having elevated a poor boy above his equals, by the title of Emperor, and even above the whole Human Race, by that of Son of the Church, he is cruelly brought low by rigorous and degrading puniſhments. "Among other things," ſays *Montagne*,* "that part of "the police of moſt of our ſchools, has always given me "much offence. They ought, at all hazards, certainly "with much leſs diſadvantage, to have adopted the extreme of indulgence. Youth immured preſents the moſt "horrid of all gaols. To puniſh a child before he is debauched, is an infallible method to debauch him. If "you happen to paſs when the leſſon is delivering, you "hear nothing but the cries of poor children undergoing "chaſtiſement, and the ſtorming of maſters intoxicated "with rage. What a method to inſpire with the love of "learning, thoſe tender and timid ſpirits, to drive them "to it with ſurly looks, and birchen armed hand! Unjuſt, pernicious proceeding! Add to this, what *Quintilian* has well remarked on the ſubject, that this impe-

* Eſſays, book i. chap. 25.

" rious authority is pregnant with the moſt dangerous " conſequences, particularly from the mode of chaſtiſe- " ment. How much more decent an appearance would " their claſſes exhibit, ſtrewed with flowers and verdant " boughs, than with the fragments of bloody rods! I " would have portrayed in them, Joy, Gaiety, Flora, the " Graces, as the Philoſopher *Speuſyppus* had in his ſchool. " Where ſhould their improvement be looked for, but " where their pleaſure is ?*"

I have ſeen, at college, many a pretty creature ready to fall into a ſwoon with pain, receive on their little hands, up to a dozen of ſharp ſtrokes. I have ſeen, by the infliction of this puniſhment, the ſkin ſeparated from the tip of their fingers, and the bare fleſh expoſed. What ſhall be ſaid of thoſe infamous puniſhments, which produce a diſgraceful effect, at once, on the morals of both ſcholars and regents, and of which a thouſand examples might be adduced? It is impoſſible to enter into any detail, on this ſubject, without putting modeſty to the bluſh. And yet they are employed by prieſts. They reſt on a paſſage from *Solomon*'s writings, of this import, " He " that ſpareth the rod hateth the child." But who knows whether the Jews themſelves practiſed corporal puniſhment after our faſhion? The Turks, who have retained a great part of their uſages, hold this in deteſtation. It has been diffuſed over Europe only by the corruption of the Greeks of the Lower Empire, and it was introduced there by the Monks. If the Jews actually employed it, Who can tell but their ferocity might proceed from this part of their education?

* *Michael Montagne* is likewiſe, one of thoſe men who were not educated at college; the time of his continuance there, at leaſt, was very ſhort. He was inſtructed without taſting corporal puniſhment, and without emulation, under the paternal roof, by the gentleſt of fathers, and by preceptors whoſe memory he has precioufly embalmed in his writings. He became, by means of an education ſo diametrically oppoſite to ours, one of the beſt, and one of the moſt intelligent men of the Nation.

Beſides, there are in the Old Teſtament many advices never intended for our uſe. We find in it paſſages of very difficult explication, examples dangerous, and laws impracticable. In Leviticus, for example, the uſe of ſwine's fleſh is prohibited. It is repreſented as a crime worthy of death, to violate the Sabbath day, by working upon it; that of killing an ox * without the camp is forbidden under a like puniſhment, &c. St. *Paul*, in his Epiſtle to the Galatians, ſays poſitively, that the Law of *Moſes* is a Law of ſervitude; he compares it to the ſlave *Hagar*, whom *Abraham* repudiated. Whatever reſpect may be due to the Writings of *Solomon*, and to the Laws of *Moſes*, we are not their diſciples, but the diſciples of HIM, who ſaid, "ſuffer little children to come to Me; "forbid them not;" who bleſſed them, and ſaid that in order to enter into the kingdom of Heaven, we muſt become like them.

Our children, ſubverted by the vices of a faulty education, become falſe reaſoners, knaviſh, hypocritical, envious, ugly and wicked. In proportion as they increaſe in age, they increaſe alſo in malignity and the ſpirit of contradiction. There is not a ſingle ſchoolboy who knows any thing of the laws of his Country, but there are ſome who may have heard talk about thoſe of the Twelve Tables. No one of them can tell how our own wars are conducted; but many are able to entertain you with ſome account of the wars of the Greeks and Romans. Not one of them but knows that ſingle combat is prohibited; and many of them go to the fencing ſchools, where the only thing taught is to fight duels. They are ſent thither, we are told, merely to learn a graceful carriage, and to walk like gentlemen; as if a gentleman muſt walk in the poſitions of *tierce* and *quarte*, and as if the gait and attitude of a citizen ought to be that of a gladiator.

* In what part of the Moſaic Inſtitution, could our Author poſſibly find this penal ſtatute? It is, ſurely, unneceſſary to give infidelity a groundleſs triumph. H. H.

Others, deſtined to functions more peaceful, are put to ſchool to learn the art of diſputation. Truth, they gravely tell us, is ſtruck out of the colliſion of opinions. There may be ſomething like wit in the expreſſion. But, for my own part, I ſhould find myſelf incapable of diſtinguiſhing truth, if I met with her in the heat of a diſpute. I ſhould ſuſpect that I was dazzled either by my own paſſion, or that of another man. Out of diſputations have ariſen ſophiſms, hereſies, paradoxes, errors of every kind. Truth never ſhews her face before tyrants; and every man who diſputes would be a tyrant if he could. The light of truth has no reſemblance to the fatal coruſcations of the thunder, produced by the claſhing of the elements, but to the brightneſs of the Sun, which is perfectly pure only when Heaven is without a cloud.

I ſhall not follow our youth into the World, where the greateſt merit of ancient times could be of no manner of ſervice to him. What ſhould he make of his magnanimous, republican ſentiments under a deſpotiſm; and of thoſe of diſintereſtedneſs in a country where every thing is bought and ſold? What uſe could he make even of the impaſſible philoſophy of a *Diogenes*, in cities where beggars are taken up, and ſent to the houſe of correction? Youth would be ſufficiently unhappy, even ſuppoſing it to have preſerved only that fear of blame, and that deſire of commendation, under which its ſtudies were conducted. Influenced from firſt to laſt by the opinion of another, and having in itſelf no ſteady principle, the ſillieſt of women will rule over him with more unbounded empire than his profeſſor. But, let us ſay what we will, the colleges will be always full. All I pretend to plead for is, that children ſhould be delivered, at leaſt, from that tedious apprenticeſhip to miſery, by which they are depraved, at the happieſt and moſt amiable period of their exiſtence, and which has afterward ſo much influence on their character. Man is born good. It is ſociety that renders

him wicked; and our mode of education prepares the way for it.

As my teſtimony is not of ſufficient weight to bear out an aſſertion of ſo much importance, I ſhall produce ſeveral which are not liable to ſuſpicion, and which I ſhall extract at random from the Writings of Eccleſiaſtics, not in conformity to their opinions, which are dictated by their condition, but reſulting from their perſonal experience, which, in this reſpect, abſolutely deranges their whole theory.

Here is one from Father *Claude d' Abbeville*, a Capuchin Miſſionary, on the ſubject of the children of the inhabitants of the Iſland of Maragnan, on the coaſt of Braſil; where we had laid the foundations of a colony, whoſe fate has been ſimilar to that of ſo many others, which have been loſt by our want of perſeverance, and by our unhappy diviſions, the uſual and natural conſequence of injudicious education. "Farther, I know not whether it be from the "ſingular affection which fathers and mothers here bear "to their children, but certain it is, they never ſay a word "which can poſſibly give them the ſlighteſt uneaſineſs; "they are left at perfect liberty to do juſt what they "pleaſe, and to take their own way in every caſe, without any apprehenſion of reproof whatever. It is, accordingly, a moſt aſtoniſhing appearance, and what has "often excited admiration in myſelf, and many others," (and with good reaſon) "the children hardly ever do any "thing that can diſpleaſe their parents; on the contrary, "they are at pains to do every thing which they know, "or imagine, will be agreeable to them.*" He afterwards preſents a very favorable portrait of their phyſical and moral qualities.

His teſtimony is confirmed by *John de Lery*, as far as it reſpects the Braſilians, whoſe manners are the ſame,

* Hiſtory of the miſſion of Capuchin Fathers to the Iſland of Maragnan, chap. xlvii.

and who are in the near neighbourhood of that iſland. I beg leave to produce another, that of *Anthony Biet*, Superior of the Miſſionary Prieſts, who, in the year 1652, went over to Cayenne, another colony loſt to us from the ſame cauſes, and ſince indifferently ſettled. It is on the ſubject of the children of the Galibis Savages.*

" The mother takes great delight in nurſing her child. " There is no ſuch thing known among them as giving " out their children to be nurſed by a ſtranger. They " are fond of their children to exceſs. They bathe them " regularly every day in a fountain or river. They do " not ſwaddle them, but put them to ſleep in a little bed " of cotton, made expreſsly for the purpoſe. They al- " ways leave them quite naked: Their progreſs in growth " is perfectly wonderful; ſome are able to walk alone at " the age of eight or nine months. When grown to a " certain age, if they are incapable of walking upright, " they march along on their hands and feet. Thoſe " people love their children to diſtraction. They never " chide nor beat them, but permit them to enjoy perfect " liberty; which they never abuſe by doing any thing " to vex their parents. They expreſs great aſtoniſh- " ment when they ſee any of our people correct their " children."

Here is a third, extracted from the work of a Jeſuit, I mean Father *Charlevoix*, a man of various and extenſive learning. It is a paſſage from his Voyage to New Orleans, another colony which we have ſuffered to fall to nothing, through our diviſions, a conſequence of our moral conſtitution, and of our ſyſtem of education. He is ſpeaking, in general, of the children of the Savages of North America.

" Sometimes,† as the means of correcting their faults, " they employ prayers and tears, but never threatenings...

* Voyage to the Equinoctial Countries, book iii. page 390.

† Hiſtorical Journal of North America. Lett. xxiii, Aug. 1721.

" A mother, who ſees her daughter behave improperly, " falls a crying. The daughter naturally aſks what is " the matter with her, and ſhe ſatisfies herſelf with re- " plying, *You diſhonour me.* This mode of reproof ſel- " dom fails to produce the effect intended. Since, how- " ever, they have had a little more commerce with the " French, ſome of them begin to chaſtiſe their children; " but ſcarcely any except among thoſe who are *Chriſtians*, " or who are fixed in the colony. The ſevereſt puniſh- " ment uſually inflicted by the Savages, for correcting " their children, is to throw a little water in their face.... " Young women have been known to hang themſelves, " for having received from a mother ſome ſlight repri- " mand, or a few drops of water thrown in the face; " after giving warning of what they were going to do, " in theſe words, *You ſhall no longer have a daughter.*"

It is very amuſing, to obſerve the embarraſſment of this Author, in attempting to reconcile his European prejudices with his remarks as a traveller; which produces perpetual contradictions in the courſe of his Work. " It would ſeem," ſays he, " that a childhood ſo badly " diſciplined, muſt be ſucceeded by a very turbulent and " very corrupted youth." He admits that reaſon directs thoſe people earlier than it does other men; but he aſcribes the cauſe of it to their temperament, which is, as he alleges, more tranquil. He recollects not the pathetic repreſentations which he himſelf has exhibited of the ſcenes that their paſſions preſent, when they expand and exalt themſelves in the boſom of peace, in their national aſſemblies, where their harangues leave all the art of our Orators far behind, as to juſtneſs and ſublimity of imagery; or amidſt the fury of war, where they brave, in the face of fire and faggots, all the rage of their enemies. He does not chooſe to ſee, that it is our European education which deſtroys our temper, for he acknowledges, in another place, that theſe ſame Savages, brought up after our manner, become more wicked than others. There

are paſſages in his Work, in which he preſents the moſt affecting elogium of their morality, of their amiable qualities, and of their happy life. He ſometimes ſeems to envy their condition.

Time permits me not to give at large thoſe different paſſages that may be read in the Book from which the above extract is made, nor to produce a multitude of other teſtimonies, reſpecting the different Nations of Aſia, which demonſtrate the perceptible influence that gentleneſs of education has on the phyſical and moral beauty of mankind, and which muſt be, in every political conſtitution, the moſt powerful bond of union among the members of the State.

I ſhall conclude theſe foreign authorities by a touch which good *John James Rouſſeau* could not have given with impunity, and which is extracted word for word from the work of a Dominican; I mean the agreeable Hiſtory of the Antilles, by Father *du Tertre*, a man replete with taſte, with good ſenſe and humanity. Hear what he ſays of the Caraïbs, whoſe education reſembles that of the nations which I have been deſcribing.*

" On mentioning the word Savage," ſays he, " moſt " people will figure to themſelves a ſpecies of men, bar- " barous, cruel, inhuman, deſtitute of reaſon, deformed, " tall as giants, hairy like bears; in a word, rather mon- " ſters than rational beings; though, in truth, our Sava- " ges are ſuch only in name, juſt as the plants and the " fruits which Nature produces without culture in foreſts " and deſerts; for theſe too we denominate wild or ſav- " age, though they poſſeſs the real virtues and properties " in their native force and vigor, which we frequently " corrupt by art, and cauſe to degenerate by tranſplanta- " tion into our gardens.....It is of importance," adds he afterwards, " to demonſtrate in this treatiſe, that the Sav- " ages in theſe iſlands, are the moſt content, the happieſt,

* Natural Hiſtory of the Antilles, vol. ii. treatiſe vii. chap. i. ſect. i.

" *the leaſt vicious*, the moſt ſociable, the leaſt deformed " and the leaſt tormented by diſeaſe of any people in the " world."

If we trace among ourſelves the hiſtory of a villain's life, we ſhall find that his infancy was always very miſerable. Wherever I have found children unhappy, I always obſerved they were wicked and ugly; and wherever I ſaw them happy, there likewiſe they were beautiful and good. In Holland and Flanders, where they are brought up with the greateſt gentleneſs, their beauty is ſingularly remarkable. It is from them that the famous ſculptor, *Francis* the Flemiſh, borrowed his charming models of children; and *Rubens*, that freſhneſs of colouring which glows on thoſe of his pictures. You never hear them, as in our cities, uttering loud and bitter cries; ſtill leſs do you hear them threatened with the rod by their mothers and nurſes, as with us. They are not gay, but they are contented. You obſerve on their countenance an air of tranquillity and ſatisfaction which is perfectly enchanting, and infinitely more intereſting than the boiſterous mirth of our young people when they are no longer under the eye of their fathers or preceptors.

This calmneſs is diffuſed over all their actions, and is the ſource of a happy compoſure which characterizes their whole future life. I never ſaw any country where parental tenderneſs was ſo ſtrikingly expreſſed. The children, in their turn, repay them, in their old age, the indulgence with which they were treated in helpleſs infancy. By bonds ſo endearing are theſe people attached to their country, and ſo powerfully that we find very few of them ſettling among ſtrangers. With us, on the contrary, fathers like better to ſee their children ſprightly than good, becauſe in a conſtitution of ambitious ſociety, ſpirit raiſes a man to the head of a party, but goodneſs makes dupes. They have collections of epigrams compoſed by their children; but wit being only the perception of the relations of ſociety, children ſcarcely ever

have any but what is borrowed. Wit itſelf is frequently, in them, the proof of a miſerable exiſtence, as may be remarked in the ſchoolboys of our cities, who uſually are ſprightlier than the children of the peaſantry; and in ſuch as labour under ſome natural defect, as lameneſs, hunchbackedneſs, and the like, who, in reſpect of wit, are ſtill more premature than others. But, in general, they are all exceedingly forward in point of feeling; and this reflects great blame on thoſe who degrade them, at an age when they frequently feel more delicately than men.

Of this I ſhall produce ſome inſtances, calculated to demonſtrate that, notwithſtanding the defects of our political conſtitutions, there ſtill exiſt, in ſome families, good natural qualities, or well informed virtues, which leave, to the happy affections of children, the liberty of expanding.

I was at Dreſden, in 1765, and happened to go to the Court Theatre: The piece performed was, *The Father*. In came the Electreſs, with one of her daughters, who might be about five or ſix years of age. An officer of the Saxon guards, who had introduced me, ſaid in a whiſper, "That child will intereſt you much more than the play." In fact, as ſoon as ſhe had taken her ſeat, ſhe reſted both hands on the front of the box, fixed her eyes on the ſtage, and remained, with open mouth, immoveably attentive to the performers. It was a truly affecting exhibition; her face, like a mirror, reflected all the different paſſions which the drama was intended to excite. You could ſee, in ſucceſſion, depicted upon it, anxiety, ſurpriſe, melancholy, ſorrow; at laſt, as the intereſt increaſed from ſcene to ſcene, the tears began to trickle copiouſly down her little cheeks; accompanied with ſhivering, ſighing, ſobbing: Till it became neceſſary at length to carry her out of the box, for fear of her being ſtifled. My companion informed me, that as often as this young princeſs attended the repreſentation of a pathetic piece, ſhe was obliged to retire, before it came to the criſis.

I have witneſſed inſtances of ſenſibility ſtill more affecting, in the children of the common people, becauſe they were not produced by any theatrical effect. As I was taking my walk, ſome years ago, through the Pré St. Gervais, about the ſetting in of winter, I obſerved a poor woman, lying along the ground, employed in weeding a bed of ſorrel; cloſe by her was a little girl, of ſix years old at moſt, ſtanding, motionleſs, and quite impurpled with the cold. I addreſſed myſelf to the woman, who betrayed evident ſymptoms of indiſpoſition, and enquired into the nature of her malady. "Sir," ſaid ſhe to me, "for three months paſt, I have ſuffered very ſeverely "from the rheumatiſm; but my diſeaſe gives me much "leſs pain than that poor child: She will not quit me "a ſingle moment. If I ſay to her, ſee, you are quite "benumbed with cold, go within doors and warm your-"ſelf; ſhe replies: alas! mother, if I leave you, your "complaints will be your only companion."

Another time, being at Marly, I went into that magnificent park, and amuſed myſelf in the woods with looking at the charming group of children who are feeding, with vine boughs and grapes, a ſhe goat which ſeems at play with them. At no great diſtance is an incloſed pavillion, where *Louis* XV, in fine weather, ſometimes went to enjoy a collation. Being caught in a ſudden ſhower, I went in for a few moments to ſhelter myſelf. I there found three children, who intereſted me much more than the children in marble without doors. They were two little girls, uncommonly handſome, employed with ſingular activity, in picking up round the arbour, the ſcattered ſticks of dry wood, which they depoſited in a baſket that ſtood on the King's table, while a little boy, all in tatters, and extremely lean, was devouring a morſel of bread in a corner. I aſked the talleſt, who might be about eight or nine years old, what ſhe intended to do with that wood, which ſhe was ſo buſily collecting. She

replied, "Look, Sir, at that poor boy, there; he is very "miserable! He is so unfortunate as to have a stepmoth- "er, who sends him out, all day long, to pick up wood: "If he carries none home, he is beaten severely; when "he happens to have got a little, and is carrying it off, "the Swiss at the park gate takes it from him, and ap- "plies it to his own use. He is half dead with hunger, "and we have given him our breakfast." Having thus spoken, she and her companion filled the little basket, helped him up with it on his back, and ran away before their unhappy friend to the gate of the park, to see if he could pass unmolested.

Foolish Instructors! Human nature, you tell us, is corrupted: Yes, but you are the persons who corrupt it by contradictions, by unprofitable studies, by dangerous ambition, by shameful chastisements; and by an equitable reaction of divine Justice, that feeble and unfortunate generation will one day give back to that which oppresses it, in jealousies, in disputes, in apathies, and in oppositions of tastes, of modes, and of opinions, all the mischief which it first received.

I have explained, to the best of my ability, the causes, and the reactions of our evils, in the view of vindicating Nature from the charge of having produced them. I propose, at the close of this Work, to exhibit the palliatives and the remedies. They will, no doubt, prove vain and inefficient speculations: But if some Minister shall have the courage, one day, to undertake to render the Nation internally happy, and powerful abroad, I can venture to predict, that this will be effected neither by plans of economy, nor by political alliances, but by reforming its manners, and its plan of education. He never will make good this revolution, by means of punishments and rewards, but by imitating the processes of Nature, who always carries her point by reaction. It is not to the apparent evil that the remedy must be applied, but

to its cauſe. The cauſe of the moral power of gold, is in the venality of public officers; that of the exceſſive ſuperabundance of indolent tradeſmen in our cities, is in the impoſts which degrade the inhabitants of the country; that of the beggary of the poor, is in the overgrown property of the rich; that of the proſtitution of young women, is in the celibacy of the men; that of the prejudices of the Nobility, in the reſentments of the vulgar; and that of all the evils of ſociety, in the torments inflicted on children.

For my own part, I have ſpoken out; and if I could have ſpoken to the Nation in one vaſt aſſembly, from ſome point of the Horizon where Paris is diſcernible, I would have pointed out to my Country, on the one part, the monuments of the rich; the thouſands of voluptuous palaces in the ſuburbs, eleven theatres, the ſteeples of a hundred and thirty four convents, among which ariſe eleven wealthy abbeys; thoſe of a hundred and ſixty other churches, twenty of which are richly endowed chapters: And, on the other part, I would have pointed out the monuments of the wretched; fifty ſeven colleges, ſixteen courts of juſtice, fourteen barracks, thirty guard houſes, twentyſix hoſpitals, twelve priſons or houſes of correction. I would have diſplayed the magnificence of the gardens, of the courts, of the greens, of the incloſures, and of the dependencies, of all theſe vaſt edifices, accumulated on a ſpace of ground leſs than a league and a half in diameter. I would have demanded, whether the reſt of the Kingdom is diſtributed in the ſame proportion as the Capital: Where are the properties of thoſe who ſupply it with food, with clothing, with the means of lodging, of thoſe who defend it; and what at laſt, is left for the multitude, to maintain citizens, fathers of families, and happy men? Oh! ye moral and political Powers, after having ſhewn you the cauſes and the effects of our evils, I would have proſtrated myſelf at your feet,

and would have expected, as the reward of truth, the same recompense which the peasant of the Danube expected from the insatiable powers of Rome.

STUDY SEVENTH.

REPLIES TO THE OBJECTIONS AGAINST A DIVINE PROVIDENCE, AND THE HOPES OF A LIFE TO COME, FOUNDED ON THE INCOMPREHENSIBLE NATURE OF GOD, AND THE MISERIES OF A PRESENT STATE.

" WHAT avails it me," ſome one will ſay, " that my " tyrants are puniſhed, if I am ſtill to be the victim of " tyranny? Is it poſſible that ſuch compenſations ſhould " be the work of GOD? Great Philoſophers, who have " devoted their whole life to the ſtudy of Nature, have " refuſed to acknowledge its Author. Who hath ſeen " GOD at any time? What is it that conſtitutes GOD? " But taking it for granted that an intelligent Being di- " rects the affairs of this Univerſe, Man aſſuredly is a- " bandoned to himſelf: No hand has traced his career: " As far as he is concerned, there are, apparently, two " Deities; the one inviting him to unbounded enjoy- " ment, and the other dooming him to endleſs privation; " one God of Nature, and another God of Religion. He " is totally uncertain whether of the two he is bound to " pleaſe; and whatever be the choice which he is deter- " mined to make, how can he tell whether he is rendering " himſelf an object of love or of hatred?

" His virtue itſelf fills him with doubts and ſcruples; " it renders him miſerable, both inwardly and outwardly; " it reduces him to a ſtate of perpetual warfare with him-

" ſelf, and with the world, to the intereſts of which he is " obliged to make a ſacrifice of himſelf. If he is chaſte, " the world calls him impotent; if he is religious, he is " accounted ſilly; if he diſcovers benignity of diſpoſition " to thoſe around him, it is becauſe he wants courage; if " he devotes himſelf for the good of his country, he is a " fanatic; if he is ſimple, he is duped; if he is modeſt, " he is ſupplanted; he is every where derided, betrayed, " deſpiſed, now by the philoſopher, and now by the dev- " otee. On what foundation can he build the hope of " a recompenſe for ſo many ſtruggles and mortifications? " On a life to come? What aſſurance has he of its ex- " iſtence? Where is the traveller that ever returned " from thence?

" What is the ſoul of man? Where was it a hundred " years ago? Where will it be a century hence? It ex- " pands with the ſenſes, and expires when they expire. " What becomes of it in ſleep, in a lethargy? It is the " illuſion of pride to imagine that it is immortal: Nature " univerſally points to death, in his monuments, in his " appetites, in his loves, in his friendſhips: Man is uni- " verſally reduced to the neceſſity of drawing a veil over " this idea. In order to live leſs miſerable, he ought to " *divert* himſelf, that is, as the word literally imports, he " ought to *turn aſide* from that diſmal perſpective of woes " which Nature is preſenting to him on every ſide. To " what hopeleſs labours has ſhe not ſubjected his misera- " ble life? The beaſts of the field are a thouſand times " happier; clothed, lodged, fed by the hand of Nature, " they give themſelves up without ſolicitude to the in- " dulgence of their paſſions, and finiſh their career with- " out any preſentiment of death, and without any fear of " an hereafter.

" If there be a GOD who preſides over the deſtiny of " all, he muſt be inimical to the felicity of the Human " Race. What is it to me that the Earth is clothed with " vegetables, if I have not the ſhade of a ſingle tree at my

" diſpoſal? Of what importance are to me the laws of " harmony and of love, which govern Nature, if I be- " hold around me only objects faithleſs and deceiving; " or if my fortune, my condition, my religion, impoſe " celibacy upon me? The general felicity, diffuſed over " the Earth, ſerves only as a bitter aggravation of my " particular wretchedneſs. What intereſt is it poſſible " for me to take in the wiſdom of an arrangement which " renovates all things, if, as a conſequence of that very " arrangement, I feel myſelf ſinking, and ready to be loſt " forever? One ſingle wretch might arraign Providence, " and ſay with *Job*, the Arabian :* *Wherefore is light* " *given to him that is in miſery; and life unto the bitter* " *in ſoul?* Alas! The appearances of happineſs have been " diſcloſed to the view of Man, only to overwhelm him " with deſpair of ever attaining it. If a GOD, intelli- " gent and beneficent, governs Nature, diabolical ſpirits " direct and confound, at leaſt the affairs of the children " of men."

I ſhall, firſt, reply to the principal authorities, on which ſome of thoſe objections are ſupported. They are extracted, in part, from a celebrated Poet, and a learned Philoſopher, namely *Lucretius*, and from *Pliny*.

Lucretius has clothed the Philoſophy of *Empedocles* and *Epicurus* in very beautiful verſes. His imagery is enchanting; but that Philoſophy of atoms, which adhere to each other by chance, is ſo completely abſurd, that wherever it appears, the beauty of the poetry is impaired. For the truth of this, I confidently refer to the judgment of his partiſans themſelves. It ſpeaks neither to the heart nor to the underſtanding. It offends equally in its principles, and in the conſequences deduced from them. To what, we may aſk him, do thoſe primary atoms, out of which you conſtruct the elements of Nature, owe their exiſtence? Who communicated to them the firſt move-

* Job, chap. iii. ver. 20.

ment? How is it poſſible they ſhould have given to the aggregation of a great number of bodies, a ſpirit of life, a ſenſibility and a will, which they themſelves poſſeſſed not.

If you believe, with *Leibnitz*, that thoſe *monads*, or unities, have, in truth, perceptions peculiar to themſelves, you give up the laws of chance, and are reduced to the neceſſity of allowing to the elements of nature, the intelligence which you refuſe to its AUTHOR. *Deſcartes* has, in truth, ſubjected thoſe impalpable principles, and, if I may be allowed the expreſſion, that metaphyſical duſt, to the laws of an ingenious Geometry; and after him, the herd of Philoſophers, ſeduced by the facility of erecting all ſorts of ſyſtems with the ſame materials, have applied to them, by turns, the laws of attraction, of fermentation, of cryſtallization; in a word, all the operations of Chemiſtry, and all the ſubtilties of dialectics: But all, with equal ſucceſs, that is, with none whatever. We ſhall demonſtrate, in the article which follows this, when we come to ſpeak of the weakneſs of Human Reaſon, that the method adopted in our Schools, of riſing up to firſt cauſes, is the perpetual ſource of the errors of our Philoſophy, in phyſics as well as in morals. Fundamental truths reſemble the ſtars, and our reaſon is like the graphometer. If this inſtrument, conſtructed for the purpoſe of obſerving the heavenly bodies, has been deranged however ſlightly; if from the point of departure, we commit a miſtake of the minuteſt angle imaginable, the error, at the extremity of the viſual rays, becomes abſolutely incommenſurable.

There is ſomething ſtill more ſtrange, in the method which *Lucretius* has thought proper to purſue: Namely, that, in a Work, the profeſſed object of which is to materialize the Deity, he ſets out with defying matter. In this he has himſelf given way to an univerſal principle, which we ſhall endeavour to unfold, when we come to adduce the proofs of the Divinity from feeling; it is this, that we find it impoſſible powerfully to intereſt mankind,

whatever be the object, without presenting to the Mind, some of the attributes of Deity. Before he attempts, therefore, to dazzle the understanding, as a Philosopher, he begins with setting the heart on fire, as a Poet. Here is a part of his exordium.

.....Hominum divûmque voluptas,
Alma *Venus*, cœli subter labentia signa
Quæ mare navigerum, quæ terras frugiferentes
Concelebras, per te quoniam genus omne animantûm
Concipitur, visitque exortum lumina solis,
Te dea, te fugiunt venti, te nubila cœli,
Adventumque tuo, tibi suaves dædala tellus
Submittit flores, tibi rident æquora ponti,
Placatumque nitet diffuso lumine cœlum.
. . . . . .
Quæ quoniam rerum naturam sola gubernas,
Nec, sine te, quidquam dias in luminis oras
Exoritur, neque sit lætum, neque amabile quidquam,
Te sociam studeo scribendis versibus esse,
Quos ego de rerum naturâ pangere conor.
. . . . . .
Quo magis æternum, da dictis, diva, leporem.
Effice ut interea fera munera militiaï
Per maria ac terras omnes sopita quiescant;
Nam tu sola potes tranquillâ pace juvare
Mortales, quoniam belli fera munera Mavors.
Armipotens regit, in gremium qui sæpe tuum se
Rejicit, æterno devictus vulnere amoris.
. . . . . .
Hunc, tu diva, tuo recubantem corpore sancto
Circumfusa super, suaves ex ore loquelas
Funde, petens placidam Romanis, inclyta pacem:
Nam neque nos agere, hoc patriaï tempore iniquo,
Possumus æquo animo.

De Rerum Natura, lib. 1.

I shall endeavour, as well as I can, to give a plain prose translation of those beautiful verses.

" ——— Delight of men and gods, gracious *Venus!* " who presidest over the sail bearing Ocean, and the fer- " tile Earth, while the hosts of Heaven glide majestically " silent around; since by thy prolific virtue, the whole " animal creation teems with life, and turns the opening

" eyeball to the light of the Sun; at thy approach, O " Goddeſs, the winds are huſhed, the vapours that ob- " ſcure the face of the ſky diſperſe, the variegated ground " ſpreads a carpet of enamelled flowers underneath thy " feet; the waters of the deep ſmile with joy, and the " placid ſky is overſpread with a milder light.....Seeing, " then, that thou reigneſt, ſole Empreſs of Nature; ſince " without thee no living creature ariſes into day, or poſ- " ſeſſes the capacity of receiving or communicating de- " light, how gladly would I aſſume thee as my aſſociate " in the arduous undertaking on which I now enter—an " enquiry into the nature of things....Give, then, O God- " deſs, ſomewhat of thy unfading grace to my ſtrains. " And grant, meanwhile, that the din of battle may ceaſe " over every land, over every ſea: For with thee it reſts " to reduce the troubled world to peace; ſince *Mars*, all " powerful in arms, directs the thunder of war; who " frequently retires well pleaſed from the enſanguined " plain, to ſolace himſelf in the ſoft dalliance of thy un- " cloying love.....In thoſe fond moments, when affection " can deny nothing, intreat him to have compaſſion on " his own Rome and thine, and beſtow on it laſting tran- " quillity; for how can the voice of the philoſophic " Muſe be heard amidſt the confuſed noiſe of civil diſ- " cord?*"

* Mr. *Creech* and Mr. *Dryden* have both tranſlated this paſſage of *Lucretius*. It would have ſaved me a little labour, had I dared to tranſcribe from either of their poetical verſions. But, every thing conſidered, I have ventured rather to hazard one of my own. If it ſhall be deemed deficient in poetical merit, two qualities, at leaſt, it poſſeſſes; it conveys enough of the ſenſe of the Original, to anſwer the purpoſe of its being quoted in this Work, and it cannot poſſibly give offence to any modeſt ear.

VENUS, all hail! of Gods and men the pride;
Mov'd by whoſe pow'r, the heav'nly bodies glide,
In myſtic round; thine is the teeming Earth,
To Thee the ſwelling Ocean owes his birth:
Source of all life! thou breath'ſt the living ſoul,
And kindleſt joy " from Indus to the Pole."

Lucretius is, in truth, conſtrained to admit, in the ſequel of his Poem, that this goddeſs, ſo wonderfully beneficent, is directly chargeable with the ruin of health, of fortune, of parts, and, ſooner or later, with the loſs of reputation: That, from the very lap of the pleaſures which ſhe beſtows, there iſſues a ſomething which embitters enjoyment, which torments a man, and renders him miſerable. The unfortunate Bard himſelf fell a victim to this, for he died in the very prime of life, either from exceſſive indulgence, according to ſome, or poiſoned, according to others, by an amorous potion adminiſtered by the hand of a woman.

In the paſſage above quoted, he aſcribes to *Venus* the creation of the world; he addreſſes prayers to her; he beſtows on her perſon the epithet of ſacred; he inveſts

At thy approach the noiſy tempeſts ceaſe,
The air grows pure, and all the World is peace;
For Thee the SPRING her flow'ry mantle weaves,
For Thee AUTUMNUS piles his golden ſheaves:
The placid Deep reflects a clearer ray,
And SOL emits through Heaven a brighter day.
. . . . . .
Since, Goddeſs, thus all own thy ſov'reign pow'r;
Since, without Thee, none ſees the natal hour;
Without Thee nought of fair, of ſweet, is ſeen,
Delight of Nature! Univerſal Queen!
Viſit thy bard with ſome celeſtial dream;
Be Thou, my Muſe, for Nature is my theme.
. . . . . .
Around my lays thy winning graces ſhed,
So ſhall immortal honours crown my head.
Meanwhile, command a troubled world to reſt,
Bid the fierce ſoldier calm his angry breaſt.
Let Sea and Land thy genial influence feel;
Let placid Nations at Thine altar kneel.
Beſmear'd with blood, and ſick of war's alarms,
Soothe back fierce MARS to thy all conqu'ring arms:
Tell him how Rome now bleeds at every vein;
Let thy ſweet voice reſtore the gentle reign,
Of golden SATURN. Bid the trumpet ceaſe,
Let all in ROME; and all the WORLD be peace.

H. H.

her with a character of goodneſs, of juſtice, of intelligence, and of power, which belongs to GOD only; in a word, the attributes are ſo exactly the ſame, that, ſuppreſſing only the word *Venus*, in the invocation of his Poem, you may apply it almoſt entirely to the Divine Wiſdom. There are even points of reſemblance, ſo ſtriking, to the repreſentation given of it in the Book of Eccleſiaſticus, that I cannot refrain from exhibiting the counterpart, that the Reader may have it in his power to make the compariſon.

Eccleſiaſt. chap. xxiv.

Vulgate Latin Verſion.	*Common Engliſh Verſion.*
3, 4, 5. Ego ex ore Altiſſimi prodivi, primogenita ante omnem creaturam; ego feci in cœlis ut oritur lumen indeficiens, & ſicut nebula texi omnem terram. Ego in altiſſimis habitavi, & thronus meus in columnâ nubis.	3. I came out of the mouth of the Moſt High, and covered the earth as a cloud. 4. I dwelt in high places, and my throne is in a cloudy pillar. 5. I alone compaſſed the circuit of Heaven; and walked in the bottom of the Deep.
6, 7, 8, 9. Gyrum cœli circuivi ſola & profundum abyſſi penetravi; in fluctibus ambulavi, & in omni terrâ ſteti & in omni populo; & in omni populo primatum habui. Et omnium excellentium & humilium corda virtute calcavi, & in his omnibus requiem quæſivi, & in hæreditate domini morabor.	6. In the waves of the ſea, and in all the earth, and in every people and nation, I got a poſſeſſion. 7. With all theſe I ſought reſt: And in whoſe inheritance ſhall I abide?
13. Quaſi cedrus exaltata ſum in Libano, & quaſi cypreſſus in Monte Sion.	13. I was exalted like a cedar in Libanus, and as a cypreſs tree upon the mountains of Hermon.
14. Quaſi palma exaltata ſum in Gades, & quaſi plantatio roſæ in	14. I was exalted like a palm tree in Engaddi, and as a roſe

Jericho. Quaſi oliva ſpecioſa in campis, & quaſi platanus exaltata ſum juxta aquam in plateis.

plant in Jericho, as a fair olive tree in a pleaſant field, and grew up as a plane tree by the water.

16. Ego quaſi terebinthus extendi ramos meos, & rami mei honoris & gratiæ.

16. As the turpentine tree, I ſtretched out my branches, and my branches are the branches of honour and grace.

17. Ego quaſi vitis fructificavi ſuavitatem odoris, et flores mei fructus honoris & honeſtatis.

17. As the vine brought I forth pleaſant ſavour, and my flowers are the fruit of honour and riches.

18. Ego mater pulchræ dilectionis, & timoris, & agnitionis, & ſanctæ ſpei. In me gratia omnis viæ & veritatis, in me omnis ſpes vitæ & virtutis.

18. I am the mother of fair love, and fear, and knowledge, and holy hope: I therefore being eternal, am given to all my children which are named of him.

19. Tranſite ad me, omnes qui concupiſcitis me, & generationibus meis implemini.

19. Come unto me, all ye that be deſirous of me, and fill yourſelves with my fruits.

20. Spiritus enim meus ſuper mel dulce, & hæreditas mea ſuper mel & favum.

20. For my memorial is ſweeter than honey, and mine inheritance than the honeycomb.

" Out of the mouth of the ALMIGHTY proceeded I. " Before any created being knew that it exiſted, I was. " If there be in Heaven a light never to be extinguiſhed, " I commanded it to ariſe. If the Earth is involved in " clouds, I commanded the vapour to aſcend. The lof- " ty places of the Earth are my habitation; and my " throne is in the cloudy pillar. In ſolitude I make " the round of the ſtarry Heavens; I plunge to the bot- " tom of the vaſt abyſs, and walk majeſtic under the " waves of the Sea. On every land the ſole of my foot " alights, and I travel from ſhore to ſhore. Wherever I " appear, my ſovereignty is acknowledged. In the great- " neſs of my might, I have ſubdued the heart of the " humble and of the proud. I have ſought for a place

" of habitation in the midſt of them ; but I will fix mine " abode only in the heritage of JEHOVAH....I have lift- " ed up myſelf as a cedar upon Mount Lebanon, and as " the cypreſs tree on the hills of Zion. My branches " have been exalted to the Heavens, like the palm trees " of Kadeſh, and as the bloſſoms of the roſe which ſur- " round Jericho. I am beautiful as the olive on the " brow of the hill, and majeſtic as the plane tree, in an " open place, by the fountains of water.....I have extend- " ed my boughs as the terebinthus ; my branches are " branches of honour and grace. I have put forth, as the " vine, bloſſoms of the ſweeteſt perfume, and my buds " have produced the fruits of glory and abundance. I " am the parent of holy love, of fear, of knowledge, and " of ſacred hope ; I alone point out the road that is ſafe " and eaſy ; and unfold truths that give delight ; in me " repoſes all the expectation of life and virtue. Come " to me, all ye who love me ; and my never ceaſing pro- " ductions ſhall fill you with rapture ; for my ſpirit is " ſweeter than honey, and my diſtribution of it far ſupe- " rior to the cells of the honeycomb."

This feeble tranſlation is after the Latin proſe verſion, itſelf a tranſlation from the Greek, and it again from the Hebrew. It is not to be doubted, therefore, that in paſſing through ſo many ſtrainers, much of the grace of the original muſt have evaporated. But even as it is, it poſſeſſes a decided ſuperiority, in reſpect of pleaſantneſs and ſublimity of imagery, over the verſes of *Lucretius*, who appears to have borrowed his principal beauties from this paſſage. And here I diſmiſs that Poet : The exordium of his performance is a complete refutation of it.

Pliny takes the directly oppoſite courſe. In the very threſhold of his Natural Hiſtory, he affirms, that there is no God, and the whole of that Work is an elaborate demonſtration of the being of GOD. His authority muſt neceſſarily be of conſiderable weight, as it is not that of a Poet, to whom opinions are a matter of indifference, pre-

vided he can produce a ſtriking picture; nor that of a ſectary, obſtinately determined to ſupport a party, whatever violence may be done to conſcience; nor, finally, that of a flatterer, making his court to vicious Princes. *Pliny* wrote under the virtuous *Titus*, and has dedicated his Book to him. He carries to ſuch a height, the love of truth, and contempt of the glory of the age in which he lived, as to condemn the victories of *Ceſar*, in Rome itſelf, and when addreſſing a Roman Emperor. He is replete with humanity and virtue. He frequently expoſes to cenſure the cruelty of maſters to their ſlaves, the luxury of the great, nay, the diſſolute conduct of ſeveral Empreſſes. He ſometimes pronounces the panegyric of good men; and exalts even above the inventors of arts, perſons who have rendered themſelves illuſtrious by their continency, their modeſty, and their piety.

His Work, in other reſpects, is a combination of brilliancies. It is a real Encyclopedia, which contains, as it ought, the hiſtory of the knowledge, and of the errors of his time. Theſe laſt are ſometimes imputed to him very unjuſtly, for he frequently brings them forward, merely in the view of refuting them. But he has been abuſed by the Phyſicians, and the Apothecaries, who have extracted the greateſt part of their preſcriptions from him, becauſe he finds fault with their conjectural art, and with their ſyſtematic ſpirit. He abounds, beſides, in curious information, in profound views, and intereſting traditions; and, what renders his performance invaluable, he uniformly expreſſes himſelf in a pictureſque manner. With all this taſte, judgment and knowledge, *Pliny* is an atheiſt. Nature, from whoſe capacious ſtores, he has derived ſuch various intelligence, may addreſs him in the words of *Ceſar* to *Brutus: What, you too, my ſon!*

Pliny I love, and I eſteem: And if I may be permitted to ſay, in his juſtification, what I think of his immortal Work, I believe it to be falſified in the paſſage where he is made to reaſon as an atheiſt. All his commentators a-

gree in thinking, that no one Author has ſuffered more from the unfaithfulneſs of tranſcribers, than he has done ; and this to ſuch a degree, that copies of his Natural Hiſtory exiſt, in which there are whole chapters entirely different. Conſult, among others, what *Mathiola* ſays on the ſubject, in his commentaries on *Dioſcorides*. I ſhall here take occaſion to obſerve, that the Writings of the Ancients, on their way to us, have paſſed through more than one unfaithful language, and what is much worſe, through more than one ſuſpicious hand. They have met with the fate of their monuments, among which their temples have been moſt of all degraded. Their books have, in like manner, been mutilated chiefly in thoſe paſſages which are favourable to religion, or the reverſe. An inſtance of this we have, in the tranſcription of *Cicero*'s Treatiſe *on the Nature of the Gods*, in which the objections againſt Providence are omitted.

Montagne upbraids the firſt Chriſtians with having ſuppreſſed, on account of four or five articles which contradicted their creed, a part of the Works of *Cornelius Tacitus*, " though," ſays he, " the Emperor *Tacitus*, his re- " lation, had, by expreſs edicts, furniſhed all the libraries " in the World with them.*"

In our own days, Do we not ſee how every party exerts itſelf to run down the reputation, and the opinions of the party which oppoſes it ? Mankind is, in the hands of religion and philoſophy, like the old man in the fable, between two dames of different ages. They had both a mind to trim his locks, each in her own way. The younger picked carefully out all the white hairs, which ſhe could not bear ; the old one, for an oppoſite reaſon, as carefully removed the black : The conſequence was, his head was ſpeedily reduced to complete baldneſs.

It is impoſſible to adduce a more ſatisfactory demonſtration of this ancient infidelity of the two parties, than

* Eſſays, book ii. chap. xix.

an interpolation to be found in the Writings of *Flavius Josephus*, who was contemporary with *Pliny*. He is made to say, in so many words, that the Messiah was just born; and he continues his narration, without referring, so much as once, to this wonderful event, to the end of a voluminous history. How can it be believed that *Josephus*, who frequently indulges himself in a tedious detail of minute circumstances, relating to events of little importance, should not have reverted a thousand and a thousand times, to a birth so deeply interesting to his Nation, considering that its very destiny was involved in that event, and that even the destruction of Jerusalem was only one of the consequences of the death of JESUS CHRIST? He, on the contrary, perverts the meaning of the prophecies which announce Him, applying them to *Vespasian* and to *Titus*; for he, as well as the other Jews, expected a Messiah triumphant. Besides, had *Josephus* believed in CHRIST, Would he not have embraced his Religion?

For a similar reason, Is it credible that *Pliny* should commence his Natural History with denying the existence of GOD, and afterwards fill every page of it, with expatiating on the wisdom, the goodness, the providence, the majesty of Nature; on the presages and premonitions, sent expressly from the Gods; and even on the miracles divinely operated through the medium of dreams?

Certain savage tribes have likewise been adduced as affording examples of atheism, and every sequestered corner of the Globe has been for this purpose explored. But obscure, remote tribes were no more intended to serve as an example to the human race, than certain mean and obscure families, among ourselves, could be proposed as proper models to the Nation; especially when the professed object is to support, by authority, an opinion which is necessarily subversive of all society. Besides, such assertions are absolutely false. I have read the history of the voyages from which they are extracted. The travellers acknowledge, that they had but a transient view of

thoſe people, and that they were totally unacquainted with their languages. They took it for granted, that there could be no religion among them, becauſe they ſaw no temples ; as if any other temple were neceſſary to a belief in GOD than the temple of Nature ! Theſe ſame travellers likewiſe contradict themſelves ; for they relate, that thoſe Nations, whom they elſewhere repreſent as deſtitute of all religion, make obeiſance to the Moon, at the change, and when full, by proſtrating themſelves to the Earth, or by lifting up their hands to Heaven : That they pay reſpect to the memory of their forefathers, and place viands on their tombs. The immortality of the ſoul, admitted in whatever manner you will, neceſſarily ſuppoſes the exiſtence of GOD.

But if the firſt of all truths ſtood in need of teſtimony from men, we could collect that of the whole Human Race, from geniuſes the moſt exalted, down to the loweſt ſtate of ignorance. This unanimity of teſtimony is of irreſiſtible weight ; for it is impoſſible that ſuch a thing ſhould exiſt on the Earth as univerſal error.

Hear what the ſage *Socrates* ſaid to *Euthydemus*, who expreſſed a wiſh to have a complete aſſurance that the Gods exiſted :

" Know, aſſuredly, that I told you the truth,* when I " declared the exiſtence of the Gods, and aſſerted, that " Man is their peculiar care : But expect not that they " ſhould aſſume a ſenſible appearance, and preſent them- " ſelves before you ; ſatisfy yourſelf with the contempla- " tion of their works, and with paying them adoration ; " remember that this is the way in which they make " themſelves known unto men : For of all the heavenly " powers whoſe liberality towards us is ſo great, no one " ever becomes the viſible diſpenſer of his own bounty ; " and the great GOD himſelf, who created the Univerſe, " and who ſuſtains that vaſt fabric, all the parts of which

* *Xenophon*'s Memorable Things of *Socrates*, book iv.

" are adjuſted in perfect beauty and goodneſs ; He who " conſtantly watches over it, and takes care that it ſhall " not wax old, and fall into decay through length of du- " ration, but always ſubſiſt in immortal vigor * ; He who " alſo, with power uncontrolable, conſtrains the whole to " obey his will ; and that with a promptitude which far " ſurpaſſes our imagination : HE, I ſay, is abundantly

* *Socrates* had made a particular ſtudy of Nature ; and although his judgment, reſpecting the duration and preſervation of her works, may be contrary to that of our philoſophy, which conſiders the Globe of the Earth, eſpecially, as in a progreſſive ſtate of ruin, it is in perfect harmony with that of the Holy Scriptures, which give us poſitive aſſurances that GOD upholds it, and with our own experience on the ſubject, as I have already ſhewn. We have little reaſon to undervalue the phyſical knowledge of the Ancients, except in ſo far as it was reduced to ſyſtem. We ought to recollect that they had made moſt of the diſcoveries which the Moderns boaſt as all their own. The Tuſcan Philoſophers underſtood the art of conjuring down the thunder. Good King *Numa* made experiments on this ſubject. *Tullus Hoſtilius* took a fancy to imitate, but fell a victim to his attempt, from want of underſtanding how to conduct the experiments in a proper manner. (Conſult *Plutarch.*) *Philolaus*, the Pythagorean, advanced, long before *Copernicus*, that the Sun was the centre of the World ; and before *Chriſtopher Columbus*, that our Earth conſiſted of two Continents, that on which we are placed, and the oppoſite to it. Several Philoſophers of Antiquity maintained, that comets were ſtars which purſued a regular courſe. *Pliny* himſelf ſays, that they all move in a northerly direction, which is generally true. It is not yet, however, two hundred years, ſince comets were believed, in Europe, to be vapors which caught fire in the intermediate regions of the air. The general belief, about that period, likewiſe, was, that the Sea furniſhed a ſupply of water to the fountains and rivers, by a proceſs of filtration through the pores of the Earth, though it is ſaid in a hundred paſſages of Scripture, that by the rains their ſources are kept flowing. Of this we now have the moſt complete conviction, by accurate obſervations on the evaporations of the Ocean. The monuments which the Ancients have tranſmitted to us in Architecture, Sculpture, Poetry, Tragedy, Hiſtory, will ever ſerve as models to us. We are indebted to them beſides for the invention of almoſt all the other Arts ; and it is preſumable that theſe Arts had the ſame ſuperiority over ours, which their liberal Arts have. As to the natural Sciences, they have not left us any object of compariſon ; beſides, the Prieſts, who were chiefly employed in the cultivation of them, carefully concealed their knowledge from the people. There is little room to doubt, that they poſſeſſed, on this ſubject, an illumination far tranſcending ours. Conſult what the judicious Sir *William Temple* has ſaid of the magic of the ancient Egyptians.

" viſible in all thoſe wonders of which He is the AU-
" THOR. But let our eyes attempt to penetrate to his
" throne, and to contemplate all theſe mighty operations in
" their ſource, here He muſt be ever inviſible.

" Obſerve, for a moment, that the Sun, who ſeems
" deſignedly expoſed to the view of the whole Creation,
" permits no one, however, ſteadily to behold him: The
" man who dares to make the raſh attempt, is inſtantly
" puniſhed with blindneſs. Nay, more, every inſtrument
" employed by the Gods is inviſible. The thunder is
" darted from on high; it daſhes in pieces every thing it
" meets: But no one can ſee it fall, can ſee it ſtrike,
" can ſee it return. The winds are inviſible, though we
" ſee well the ravages which they every day commit, and
" feel their influence the moment that they begin to blow.
" If there be any thing in Man that partakes of the di-
" vine Nature, it is his ſoul. There can be no doubt
" that this is his directing, governing principle, neverthe-
" leſs, it is impoſſible to ſee it. From all this be inſtruct-
" ed not to deſpiſe things inviſible: Be inſtructed to
" acknowledge their powers, in their effects and to honour
" the DEITY."

Newton, who purſued his reſearches into the Laws of Nature ſo profoundly, never pronounced the name of GOD, without moving his hat, and otherwiſe expreſſing the moſt devout reſpect. He took pleaſure in recalling this ſublime idea, even in his moments of conviviality, and conſidered it as the natural bond of union among all Nations. *Corneille le Bruyn*, the Dutch Painter, relates, that happening to dine one day at his table, in company with ſeveral other foreigners, *Newton*, when the deſert was ſerved up, propoſed a health to the Men of every Country who believe in GOD. This was drinking the health of the Human Race. Is it poſſible to conceive, that ſo many Nations, of languages and manners ſo very different, and, in many caſes, of an intelligence ſo contracted, ſhould believe in GOD, if that belief were the

reſult of ſometradition, or of a profound, metaphyſical diſquiſition? It ariſes from the ſpectacle of Nature ſimply. A poor Arabian of the Deſert, ignorant as moſt of the Arabians are, was one day aſked, How he came to be aſſured that there was a God? "In the ſame way," replied he, "that I am able to tell, by the print impreſſed "on the ſand, whether it was a man or a beaſt which "paſſed that way.*"

It is impoſſible for Man, as has been ſaid, to imagine any form, or to produce a ſingle idea of which the model is not in Nature. He expands his reaſon only on the reaſons which Nature has ſupplied. GOD muſt, therefore, neceſſarily exiſt, were it but for this, that Man has an idea of Him. But if we attentively conſider, that every thing, neceſſary to Man, exiſts in a moſt wonderful adaptation to his neceſſities, for the ſtrongeſt of all reaſons, GOD likewiſe muſt exiſt, He who is the univerſal adaptation of all the ſocieties of the Human Race.

But I ſhould wiſh to know, In what way, the perſons who doubt of his exiſtence, on a review of the Works of Nature, would deſire to be aſſured of it? Do they wiſh that he ſhould appear under a human form, and aſſume the figure of an old man, as he is painted in our churches? They would ſay, This is a man. Were He to inveſt himſelf with ſome unknown and celeſtial form, could we in a human body ſupport the ſight? The complete and unveiled diſplay of even a ſingle one of his works on the Earth, would be ſufficient to confound our feeble organs. For example, if the Earth wheels around its axis, as is ſuppoſed, there is not a human being in exiſtence, who, from a fixed point in the Heavens, could view the rapidity of its motion without horror; for he would behold rivers, oceans, kingdoms whirling about under his feet, with a velocity almoſt thrice as great as that of a cannon ball. But even the ſwiftneſs of this diurnal rota-

* Travels through Arabia, by Monſ. *d' Arvieux*.

tion is a mere nothing : For the rapidity, with which the Globe deſcribes its annual circle, and hurls us round the Sun, is ſeventy five times greater than that of a bullet ſhot from the cannon. Were it but poſſible for the eye to view through the ſkin, the mechaniſm of our own body, the ſight would overwhelm us. Durſt we make a ſingle movement, if we ſaw our blood circulating, the nerves pulling, the lungs blowing, the humours filtrating, and all the incomprehenſible aſſemblage of fibres, tubes, pumps, currents, pivots, which ſuſtain an exiſtence, at once ſo frail and ſo preſumptuous ?

Would we wiſh, on the contrary, that GOD ſhould manifeſt himſelf in a manner more adapted to his own nature, by the direct and immediate communication of his intelligence, to the excluſion of every intervenient mean ?

Archimedes, who had a mind capable of ſuch intenſe application, as not to be diſturbed from his train of thought, by the ſack of Syracuſe, in which he loſt his life, went almoſt diſtracted, from the ſimple perception of a geometrical truth, of which he ſuddenly caught a glimpſe. He was pondering, while in the bath, the means of diſcovering the quantity of alloy which a raſcally goldſmith had mixed in *Hiero*'s golden crown ; and having found it, from the analogy of the different weight of his own body, when in the water, and out of it, he ſprung from the bath, naked as he was, and ran like a madman through the ſtreets of Syracuſe, calling out, *I have found it ! I have found it !*

When ſome ſtriking truth, or ſome affecting ſentiment, happens to lay hold of the audience at a theatre, you ſee ſome melted into tears, others almoſt choked with an oppreſſed reſpiration, others quite in a tranſport, clapping their hands, and ſtamping with their feet ; the females in the boxes actually fainting away. Were theſe violent agitations of ſpirit to go on progreſſively but for a few minutes only, the perſons ſubject to them might loſe their reaſon, perhaps their life. What would be the caſe, then,

if the Source of all truth, and of all feeling, were to communicate himſelf to us in a mortal body? GOD has placed us at a ſuitable diſtance from his infinite Majeſty; near enough to have a perception of it, but not ſo near as to be annihilated by it. He veils his intelligence from us under the forms of matter; and He reſtores our confidence reſpecting the movements of the material world by the ſentiment of his intelligence. If at any time He is pleaſed to communicate himſelf in a more intimate manner, it is not through the channel of haughty Science, but through that of our virtue. He diſcloſes himſelf to the ſimple, and hides his face from the proud.

"But," it is aſked, "What made GOD? Why ſhould "there be a God?" Am I to call in queſtion his exiſtence, becauſe I am incapable of comprehending his origin? This ſtyle of reaſoning would enable us to conclude, that man does not exiſt: For, Who made men? Why ſhould there be men? Why am I in the world in the eighteenth century? Why did I not arrive in ſome of the ages which went before? And, Wherefore ſhould I not be here in thoſe which are to come? The exiſtence of GOD is at all times neceſſary, and that of Man is but contingent. Nay, this is not all; the exiſtence of Man is the only exiſtence apparently ſuperfluous in the order eſtabliſhed upon the Earth. Many iſlands have been diſcovered without inhabitants, which preſented abodes the moſt enchanting, from the diſpoſition of the valleys, of the waters, of the woods, of the animals. Man alone deranges the plans of Nature: He diverts the current from the fountain; he digs into the ſide of the hill; he ſets the foreſt on fire; he maſſacres without mercy every thing that breathes; every where he degrades the Earth, which could do very well without him.

The harmony of this Globe would be partially deſtroyed, perhaps entirely ſo, were but the ſmalleſt, and, ſeemingly, moſt inſignificant, genus of plants to be ſuppreſſed; for its annihilation would leave a certain ſpace of ground

deſtitute of verdure, and thereby rob of its nouriſhment the ſpecies of inſect which there found the ſupport of life. The deſtruction of the inſect, again, would involve that of the ſpecies of bird, which in theſe alone finds the food proper for their young; and ſo on to infinity. The total ruin of the vegetable and animal kingdoms might take its riſe from the failure of a ſingle moſs, as we may ſee that of an edifice commence in a ſmall crevice. But if the Human Race exiſted not, it would be impoſſible to ſuppoſe that any thing had been deranged: Every brook, every plant, every animal, would always be in its place. Indolent and haughty Philoſopher, who preſumeſt to demand of Nature, wherefore there ſhould be a God, why demandeſt thou not rather wherefore there ſhould be men?

All his Works ſpeak of their AUTHOR. The plain which gradually eſcapes from my eye, and the capacious vault of Heaven which incompaſſes me on every ſide, convey to me an idea of his immenſity; the fruits ſuſpended on the bough within reach of my hand, announce his providential care; the voice of the tempeſt proclaims his power; the conſtant revolution of the ſeaſons diſplays his wiſdom; the variety of proviſion which his bounty makes, in every climate, for the wants of every thing that lives, the ſtately port of the foreſts, the ſoft verdure of the meadow, the grouping of plants, the perfume and enamel of flowers, an infinite multitude of harmonies, known and unknown, are the magnificent languages which ſpeak of HIM to all men, in a thouſand and a thouſand different dialects.

Nay, the very order of Nature is ſuperfluous: GOD is the only Being whom diſorder invokes, and whom human weakneſs announces. In order to attain the knowledge of his attributes, we need only to have a feeling of our own imperfections. Oh! how ſublime is that prayer,*

* See *Flacourt's* Hiſtory of the Iſland of Madagaſcar, chap. xliv. page 182. You will there find this prayer, embarraſſed with many circumlocutions, but conveying the meaning which I have expreſſed. It is wonderful-

how congenial to the heart of Man, and ſtill in uſe among People whom we preſume to call Savages! "O "Eternal! Have mercy upon me, becauſe I am paſſing "away: O Infinite! becauſe I am but a ſpeck: O Moſt "Mighty! becauſe I am weak: O Source of Life! "becauſe I draw nigh to the grave: O Omniſcient! "becauſe I am in darkneſs: O All bounteous! becauſe "I am poor: O All ſufficient! becauſe I am nothing."

Man has given nothing to himſelf: He has received all. And "He who planted the ear, ſhall He not "hear? He who formed the eye, ſhall He not ſee? He "who teacheth Man knowledge, ſhall not he know?" I ſhould conſider myſelf as offering an inſult to the underſtanding of my Reader, and ſhould derange the plan of my Work, were I to inſiſt longer on the proofs of the exiſtence of GOD. It remains that I reply to the objections raiſed againſt his goodneſs.

It needs muſt be, we are told, that the God of Nature ſhould differ from the God of Religion, for their Laws are contradictory. This is juſt the ſame thing with ſaying, that there is one God of metals, another God of plants, and another of animals, becauſe all theſe beings are ſubjected to laws peculiar to themſelves. Nay, in all the kingdoms of Nature, the *genera* and the *ſpecies* have other Laws beſides, which are particular to them, and which, in many caſes, are in oppoſition among themſelves; but thoſe different Laws conſtitute the happineſs of each ſpecies in particular; and they concur, in one grand combination, in a moſt admirable manner, to promote the general felicity.

The Laws which govern Man are derived from the ſame plan of Wiſdom which has conſtructed the Univerſe,

ly ſtrange that Negroes ſhould have diſcovered all the attributes of Deity in the imperfections of Man. It is with juſt reaſon that the Divine Wiſdom has ſaid of itſelf, that it reſted on all nations: *Et in omni terra ſteti, & in omni populo; & in omni populo primatum habui.* In every land among every people, I fixed my ſtation; and obtained the chief place amidſt the Nations. Eccles. chap. xxiv.

Man is not a being of nature perfectly ſimple. Virtue, which ought to be the great object of his purſuit on the Earth, is an effort which he makes over himſelf, for the good of Mankind, in the view of pleaſing GOD only. It propoſes to him, on the one hand, the Divine Wiſdom as a model; and preſents to him, on the other, the moſt ſecure and unerring path to his own happineſs. Study Nature, and you will perceive that nothing can be more adapted to the felicity of Man and that Virtue carries her reward in her boſom, even in this world. A man's continency and temperance ſecure his health; contempt of riches and glory, his repoſe: And confidence in GOD, his fortitude. What can be more adapted to the condition of a creature expoſed to ſo much miſery, than modeſty and humility. Whatever the revolutions of life may be, he has no farther fear of falling, when he has taken his ſeat on the loweſt ſtep.

Let us not complain that GOD has made an unfair diſtribution of his gifts, when we ſee the abundance and the ſtate in which ſome bad men live. Whatever is on the Earth moſt uſeful, moſt beautiful, and the beſt, in every kind of thing, is within the reach of every man. Obſcurity is much better than glory, and virtue than talents. The Sun, a little field, a wife and children, are ſufficient to ſupply a conſtant ſucceſſion of pleaſures to him. Muſt he have luxuries too? A flower preſents him colours more lovely than the pearl dragged from the abyſſes of the Ocean; and a burning coal on his hearth has a brighter luſtre, and, beyond all diſpute, is infinitely more uſeful, than the famous gem which glitters on the head of the Grand Mogul.

After all, What did GOD owe to every man? Water from the fountain, a little fruit, wool to clothe him, as much land as he is able to cultivate with his own hands. So much for the wants of his body. As to thoſe of the ſoul, it is ſufficient for him to poſſeſs, in infancy, the love of his parents; in maturity, that of his wife; in old

age, the gratitude of his children; at all seasons, the good will of his neighbours, the number of whom is restricted to four or five, according to the extent and form of his domain; so much knowledge of the Globe as he can acquire by rambling, half a day, so as to get home to his own bed at night, or, at most, to the extremity of his domestic horizon; such a sense of Providence as Nature bestows on all men, and which will spring up in his heart fully as well after he has made the circuit of his field, as after returning from a voyage round the World.

With corporeal enjoyments, and mental gratifications like these, he ought to be content; whatever he desires beyond these, is above his wants, and inconsistent with the distributions of Nature. It is impossible for him to acquire superfluity but by the sacrifice of some necessary; public consideration he must purchase at the price of domestic happiness; and a name in the world of Science, by renouncing his repose. Besides, those honours, those attendants, those riches, that submission which men so eagerly hunt after, are desired unjustly. A man cannot obtain them but by plundering and enslaving his fellow citizens. The acquisition of them exposes to incredible labour and anxiety, the possession is disturbed by incessant care, and privation tears the heart with regret. By pretended blessings such as these, health, reason, conscience, all is depraved and lost. They are as fatal to Empires as to families: It was neither by labour, nor indigence; no, not even by wars, that the Roman Empire fell into ruin; but by the accumulated pleasures, knowledge, and luxury of the whole Earth.

Virtuous persons, in truth, are sometimes destitute not only of the blessings of Society, but of those of Nature. To this I answer, that their calamities frequently are productive of unspeakable benefit to them. When persecuted by the world, they are frequently, they are usually, incited to engage in some illustrious career. Affliction is the path of great talents, or, at least, that of great virtues,

which are infinitely preferable. " It is not in your pow-
" er," ſaid *Marcus Aurelius*, " to be a Naturaliſt, a Poet,
" an Orator, a Mathematician; but it is in your power
" to be a virtuous man, which is the beſt of all."

I have remarked, beſides, that no tyranny ſtarts up, of whatever kind, reſpecting either facts or opinions, but a rival tyranny inſtantly ſtarts up in oppoſition, which counterbalances it; ſo that virtue finds a protection from the very efforts made by vice to oppreſs and cruſh it. The good man frequently ſuffers: It is admitted; but if Providence were to interpoſe for his relief, as ſoon as he needed it, Providence would be at his diſpoſal; in other words, Man would have the direction of his MAKER. Beſides, virtue, in this caſe, would merit no praiſe: But rarely does it happen that the virtuous man does not ſooner or later behold the downfall of his tyrant. Or ſuppoſing the worſt that can happen, that he falls a victim to tyranny, the boundary of all his woes is death. GOD could owe Man nothing. He called him from nonexiſtence into life; in withdrawing life, He only reſumes what He gave: We have nothing whereof to complain.

An entire reſignation to the will of GOD ought, in every ſituation, to ſoothe the ſoul to peace. But if the illuſions of a vain world ſhould chance to ruffle our ſpirit, let me ſuggeſt a conſideration which may go far toward reſtoring our tranquillity. When any thing in the order of Nature bears hard upon us, and inſpires miſtruſt of its AUTHOR, let us ſuppoſe an order of things contrary to that which galls us, and we ſhall find a multitude of conſequences reſulting from this hypotheſis, which would involve much greater evils than thoſe whereof we complain. We may employ the contrary method, when ſome imaginary plan of human perfection would attempt to ſeduce us. We have but to ſuppoſe its exiſtence, in order to ſee innumerable abſurd conſequences ſpring up out of it. This twofold method, employed frequently by *Socrates*,

rendered him victorious over all the ſophiſts of his time, and may ſtill be ſucceſsfully employed to confute thoſe of the age in which we live. It is at once a rampart which defends our feeble reaſon, and a battery which levels with the duſt all the deluſion of human opinions. If you wiſh to juſtify the order of Nature, it is ſufficient to deviate from it; and, in order to refute all human ſyſtems, nothing more is neceſſary than to admit them.

For example, complaints are made of death: But if men were not to die, what would become of their poſterity? Long before now there would not have been room for them on the face of the Earth. Death, therefore, is a benefit. Men complain of the neceſſity of labouring: But unleſs they laboured, how could they paſs their time? The reputedly happy of the age, thoſe who have nothing to do, are at a loſs how to employ it. Labour, therefore, is a benefit. Men envy the beaſts the inſtinct which guides them: But if, from their birth, they knew, like them, all that they ever are to know, what ſhould they do in the World? They would ſaunter through it without intereſt, and without curioſity. Ignorance, therefore, is a benefit.

The other ills of Nature are equally neceſſary. Pain of body, and vexation of ſpirit, which ſo frequently croſs the path of life, are barriers erected by the hand of Nature, to prevent our deviating from her Laws. But for pain, bodies would be broken to pieces on the ſlighteſt ſhock: But for chagrin, ſo frequently the companion of our enjoyments, the mind would become the victim of every ſickly appetite. Diſeaſes are the efforts of temperament to purge off ſome noxious humour. Nature employs diſeaſe not to deſtroy the body, but to preſerve it. In every caſe, it is the conſequence of ſome violation of her Laws, phyſical or moral. The remedy is frequently obtained by leaving her to act in her own way. The regimen of aliments reſtores our health of body, and that of men, tranquillity of mind. Whatever may be the opinions which diſturb our repoſe in ſociety, they almoſt al-

ways vaniſh into air in ſolitude. Sleep itſelf ſimply diſpels our chagrin more gently, and more infallibly, than a book of morals. If our diſtreſſes are immoveable; and ſuch as break our reſt, they may be mitigated by having recourſe to GOD. Here is the central point toward which all the paths of human life converge. Proſperity, at all ſeaſons, invites us to his preſence, but adverſity leaves us no choice. It is the means which GOD employs to force us to take refuge in Himſelf alone. But for this voice, which addreſſes itſelf to every one of us, we ſhould ſoon forget Him, eſpecially in the tumult of great cities, where ſo many fleeting intereſts claſh with thoſe which are eternal, and where ſo many ſecond cauſes ſwallow up all attention to the FIRST.

As to the evils of Society, they are no part of the plan of Nature; but thoſe very evils demonſtrate the exiſtence of another order of things: For is it natural to imagine, that the BEING good and juſt, who has diſpoſed every thing on the Earth to promote the happineſs of Man, will permit him to be deprived of it, without puniſhing the wretch who dared to counteract his gracious deſigns? Will He do nothing in behalf of the virtuous, but unfortunate, man, whoſe conſtant ſtudy was to pleaſe Him, when He has loaded with bleſſings ſo many miſcreants who abuſe them? After having diſplayed a bounty which has met with no return, will He fail in executing neceſſary juſtice?

"But," we are told, "every thing dies with us. Here "we ought to believe our own experience; we were "nothing before our birth, and we ſhall be nothing after "death." I adopt the analogy; but if I take my point of compariſon from the moment when I was nothing, and when I came into exiſtence, What becomes of this argument? Is not one poſitive proof better than all the negative proofs in the world? You conclude from an unknown paſt to an unknown future, to perpetuate the nothingneſs of Man; and I, for my part, deduce my conſequence

from the preſent, which I know, to the future, which I do not know, as an aſſurance of this future exiſtence. I proceed on the preſumption of a goodneſs and a juſtice to come, from the inſtances of goodneſs and juſtice which I actually ſee diffuſed over the Univerſe.

Beſides, if we have, in our preſent ſtate, the deſire and the preſentiment only of a life to come; and if no one ever returned thence to give us information concerning it, the reaſon is, a proof more ſenſible would be inconſiſtent with the nature of our preſent life on the Earth. Evidence on this point muſt involve the ſame inconveniences with that of the exiſtence of GOD. Were we aſſured by ſome ſenſible demonſtration, that a world to come was prepared for us, I have the fulleſt conviction that all the purſuits of this world would from that inſtant be abandoned. This perſpective of a divine felicity, here below, would throw us into a lethargic rapture.

I recollect that on my return to France, in a veſſel which had been on a voyage to India, as ſoon as the ſailors had perfectly diſtinguiſhed the land of their native country, they became, in a great meaſure, incapable of attending to the buſineſs of the ſhip. Some looked at it wiſtfully, without the power of minding any other object; others dreſſed themſelves in their beſt clothes, as if they had been going that moment to diſembark; ſome talked to themſelves, and others wept. As we approached, the diſorder of their minds increaſed. As they had been abſent ſeveral years, there was no end to their admiration of the verdure of the hills, of the foliage of the trees, and even of the rocks which ſkirted the ſhore, covered over with ſeaweeds and moſſes; as if all theſe objects had been perfectly new to them. The church ſpires of the villages where they were born, which they diſtinguiſhed at a diſtance up the country, and which they named one after another, filled them with tranſports of delight. But when the veſſel entered the port, and when they ſaw on the quays, their friends, their fathers, their mothers, their

wives and their children, ſtretching out their arms to them with tears of joy, and calling them by their names, it was no longer poſſible to retain a ſingle man on board; they all ſprung aſhore, and it became neceſſary, according to the cuſtom of the port, to employ another ſet of mariners to bring the veſſel to her moorings.

What, then, would be the caſe, were we indulged with a ſenſible diſcovery of that Heavenly Country, inhabited by thoſe who are moſt dear to us, and who alone are moſt worthy of our ſublime affections? All the laborious and vain ſolicitudes of a preſent life would come to an end. The paſſage from the one world to the other being in every man's power, the gulf would be quickly ſhot: But Nature has involved it in obſcurity, and has planted doubt and apprehenſion to guard the paſſage.

It would appear, we are told by ſome, that the idea of the immortality of the ſoul, could ariſe only from the ſpeculations of men of genius, who, conſidering the combination of this Univerſe, and the connexion which preſent ſcenes have with thoſe which preceded them, muſt have thence concluded, that they had a neceſſary connexion with futurity; or elſe, that this idea of immortality was introduced by Legiſlators, in a ſtate of poliſhed ſociety, as furniſhing a diſtant hope, tending to conſole Mankind under the preſſure of their political injuſtice. But, if this were the caſe, how could it have found its way into the deſerts, and entered the head of a Negro, of a Caraïb, of a Patagonian, of a Tartar? How could it have been diffuſed, at once, over the iſlands of the South Seas, and over Lapland; over the voluptuous regions of Aſia, and the rude Climates of North America; among the inhabitants of Paris, and thoſe of the new Hebrides? How is it poſſible that ſo many Nations, ſeparated by vaſt Oceans, ſo different in manners and in language, ſhould have unanimouſly adopted one opinion: Nations which frequently affect, from national animoſity, a deviation from the moſt trivial cuſtoms of their neighbours?

All believe in the immortality of the ſoul. Whence could they have derived a belief ſo flatly contradicted by their daily experience? They every day ſee their friends die; but the day never cõmes when any one reappears. In vain do they carry victuals to their tombs; in vain do they ſuſpend, with tears, on the boughs of the adjoining trees, the objects which in life were moſt dear to them; neither theſe teſtimonies of an inconſolable friendſhip, nor the vows of conjugal affection, challenged by their drooping mates, nor the lamentations of their dear children, poured out over the earth which covers their remains, can bring them back from the land of ſhadows. What do they expect for themſelves, from a life to come, who expreſs all this unavailing regret over the aſhes of their departed favourites? There is no proſpect ſo inimical to the intereſts of moſt men; for ſome, having lived a life of fraud, or of violence, have reaſon to apprehend a ſtate of puniſhment; others, having been oppreſſed in this world, might juſtly fear, that the life to come was to be regulated conformably to the ſame deſtiny which preſided over that which they are going to leave.

Shall we be told, It is pride which cheriſhes this fond opinion in their breaſts? What, is it pride that induces a wretched Negro, in the Weſt Indies, to hang himſelf, in the hope of returning to his own country, where a ſecond ſtate of ſlavery awaits him? Other Nations, ſuch as the iſlanders of Taïti, reſtrict the hope of this immortality, to a renovation of preciſely the ſame life which they are going to leave. Ah! the paſſions preſent to Man far different plans of felicity; and the miſeries of his exiſtence, and the illumination of his reaſon, would long ago have deſtroyed the life that is, had not the hope of a life to come been, in the human breaſt, the reſult of a ſupernatural feeling.

But wherefore is man the only one of all animals ſubjected to other evils than thoſe of Nature? Wherefore ſhould he have been abandoned to himſelf, diſpoſed as he

is to go aſtray? He is, therefore, the victim of ſome malignant Being.

It is the province of Religion to take us up where Philoſophy leaves us. The nature of the ills which we endure, unfolds their origin. If man renders himſelf unhappy, it is becauſe he would, himſelf, be the arbiter of his own felicity. Man is a god in exile. The reign of *Saturn*, the Golden Age, *Pandora*'s box, from which iſſued every evil, and at the bottom of which hope alone remained; a thouſand ſimilar allegories, diffuſed over all Nations, atteſt the felicity, and the fall, of a firſt Man.

But there is no need to have recourſe to foreign teſtimonies. We carry the moſt unqueſtionable evidence in ourſelves. The beauties of Nature bear witneſs to the exiſtence of GOD, and the miſeries of Man confirm the truths of Religion. There exiſts not a ſingle animal but what is lodged, clothed, fed, by the hand of Nature, without care, and almoſt without labour. Man alone, from his birth upward, is overwhelmed with calamity. Firſt, he is born naked; and poſſeſſed of ſo little inſtinct, that if the mother who bare him, were not to rear him for ſeveral years, he would periſh of hunger, of heat, or of cold. He knows nothing but from the experience of his parents. They are under the neceſſity of finding him a place where to lodge, of weaving garments for him, of providing his food for eight or ten years. Whatever encomiums may have been paſſed on certain countries for their fertility, and the mildneſs of their climate, I know of no one in which ſubſiſtence of the ſimpleſt kind does not coſt Man both ſolicitude and labour. In India, he muſt have a roof over his head to ſhelter him from the heat, from the rains, and from the inſects. There, too, he muſt cultivate rice, weed it, threſh it, ſhell it, dreſs it. The banana, the moſt uſeful of all the vegetables of thoſe countries, ſtands in need of being watered, and of being hedged round, to ſecure it from the attacks of the wild beaſts by night. Magazines muſt likewiſe be provided,

for the preſervation of proviſions during thoſe ſeaſons when the Earth produces nothing. When Man has thus collected around him every thing neceſſary to a quiet and comfortable life, ambition, jealouſy, avarice, gluttony, incontinency, or languor, take poſſeſſion of his heart. He periſhes almoſt always the victim of his own paſſions. Undoubtedly, to have ſunk thus below the level of the beaſts, Man muſt have aſpired at an equality with the DEITY.

Wretched mortals! Seek your happineſs in virtue, and you will have no ground of complaint againſt Nature. Deſpiſe that uſeleſs knowledge, and thoſe unreaſonable prejudices, which have corrupted the Earth, and which every age ſubverts in its turn. Love thoſe Laws which are eternal. Your deſtiny is not abandoned to chance, nor to miſchievous demons. Recal thoſe times, the recollection of which is ſtill freſh among all Nations. The brute creation every where found the means of ſupporting life; Man alone had neither aliment, nor clothing, nor inſtinct.

Divine wiſdom left Man to himſelf, in order to bring him back to GOD. She ſcattered her bleſſings over the whole Earth that, in order to gather them, he might explore every different region of it; that he might expand his reaſon by the inſpection of her works, and that he might become enamoured of her from a ſenſe of her benefits. She placed between herſelf and him, harmleſs pleaſures, rapturous diſcoveries, pure delights and endleſs hopes, in order to lead him to herſelf, ſtep by ſtep, through the path of knowledge and happineſs. She fenced his way on both ſides, by fear, by languor, by remorſe, by pain, by all the ills of life, as boundaries deſtined to prevent him from wandering and loſing himſelf. The mother, thus, ſcatters fruit along the ground to induce her child to learn to walk; ſhe keeps at a little diſtance; ſmiles to him, calls him, ſtretches out her arms towards

him: But if he happens to fall, ſhe flies to his aſſiſtance, ſhe wipes away his tears, and comforts him.

Thus Providence interpoſes for the relief of Man, ſupplying his wants in a thouſand extraordinary ways. What would have become of him in the earlieſt ages, had he been abandoned to his own reaſon, ſtill unaided by experience? Where found he corn, which at this day conſtitutes a principal part of the food of ſo many Nations, and which the Earth, while it ſpontaneouſly produces all ſorts of plants, no where exhibits? Who taught him agriculture, an art ſo ſimple, that the moſt ſtupid of Mankind is capable of learning it, and yet ſo ſublime, that the moſt intelligent of animals never can pretend to practiſe it? There is ſcarcely an animal but what ſupports its life by vegetables, but what has daily experience of their reproduction, and which does not employ, in queſt of thoſe that ſuit them, many more combinations than would have been neceſſary for reſowing them.

But, On what did Man himſelf ſubſiſt, till an *Iſis* or a *Ceres* revealed to him this bleſſing of the ſkies? Who ſhewed him, in the firſt ages of the World, the original fruits of the orchard, ſcattered over the foreſts, and the alimentary roots concealed in the boſom of the Earth? Muſt he not, a thouſand times, have died of hunger, before he had collected a ſufficiency to ſupport life, or of poiſon, before he had learned to ſelect, or of fatigue and reſtleſſneſs, before he had formed round his habitation graſs plots and arbours? This art, the image of creation, was reſerved for that Being alone who bare the impreſſion of the Divinity.

If Providence had abandoned Man to himſelf, on proceeding from the hands of the Creator, What would have become of him? Could he have ſaid to the plains, Ye unknown foreſts, ſhew me the fruits which are my inheritance? Earth, open, and diſcloſe, in the roots buried under thy ſurface, my deſtined aliment? Ye plants, on which my life depends, manifeſt to me your qualities, and

ſupply the inſtinct which Nature has denied? Could he have had recourſe, in his diſtreſs to the compaſſion of the beaſts, and, ready to periſh with hunger, have ſaid to the cow, Take me into the number of thy children, and let me ſhare, with thy offspring, the produce of one of thy ſuperfluous teats? When the breath of the North wind made him ſhiver with cold, Would the wild goat and timid ſheep have run at his call to warm him with their fleeces? Wandering, without a protector, and without an aſylum, when he heard by night the howlings of ferocious animals demanding their prey, Could he have made ſupplication to the generous dog, and ſaid to him, Be thou my defender, and I will make thee my ſlave? Who could have ſubjected to his authority ſo many animals which ſtood in no need of him, which ſurpaſſed him in cunning, in ſpeed, in ſtrength, unleſs the hand which, notwithſtanding his fall, deſtined him ſtill to empire, had humbled their heads to the obedience of his will?

How was it poſſible for him, with a reaſon leſs infallible than their inſtinct, to raiſe himſelf up to the very Heavens, to meaſure the courſe of the ſtars, to croſs the Ocean, to call down the thunder, to imitate moſt of the Works and appearances of Nature? We are ſtruck with aſtoniſhment at theſe things now; but I am much rather aſtoniſhed, that a ſenſe of Deity ſhould have ſpoken to his heart, long before a comprehenſion of the Works of Nature had perfected his underſtanding. View him in the ſtate of nature, engaged in perpetual war with the elements, with beaſts of prey, with his fellow creatures, with himſelf; frequently reduced to ſituations of ſubjection which no other animal could poſſibly ſupport; and he is the only being who diſcovers, in the very depth of miſery, the character of infinity, and the reſtleſſneſs of immortality. He erects trophies; he engraves the record of his achievements on the bark of trees; he celebrates his funeral obſequies, and puts reverence on the aſhes of

his forefathers, from whom he has received an inheritance so fatal.

He is incessantly agitated by the rage of love or of vengeance. When he is not the victim of his fellow men, he is their tyrant: And he alone knows that Justice and Goodness govern the World, and that Virtue exalts Man to Heaven. He receives, from his cradle, none of the presents of Nature, no soft fleece, no plumage, no defensive armour, no tool, for a life so painful and so laborious; and he is the only being who invites the Gods to his birth, to his nuptials, and to his funeral obsequies.

However far he may have been misled by extravagant opinions, whenever he is struck by unexpected bursts of joy or grief, his soul, by an involuntary movement, takes refuge in the bosom of Deity. He cries out: Ah, my GOD! He raises to Heaven suppliant hands, and eyes bathed with tears, in hope of there finding a Father. Ah! the wants of Man bear witness to the providence of a Supreme Being. He has made Man feeble and ignorant, only that he may stay himself on his strength, and illuminate himself by his light; and so far is it from being true, that chance, or malignant spirits, domineer over a World, where every thing concurred to destroy a creature so wretched, his preservation, his enjoyments, and his empire, demonstrate, that, at all times, a beneficent GOD has been the friend, and the protector of human life.

STUDY EIGHTH.

OBJECTIONS AGAINST THE METHODS OF OUR REASON, AND THE PRINCIPLES OF OUR SCIENCES.

I HAVE displayed, from the beginning of this Work, the immensity of the study of Nature. I there proposed new plans, to assist us in forming an idea of the order which she has established in all her various kingdoms: But, checked by my own incapacity, all that I could presume to promise was, to trace a slight sketch of what exists in the vegetable order. However, before I proceeded to lay down new principles on this subject, I thought myself called upon to refute the prejudices which the World, and our Sciences themselves, might have diffused over Nature, in the minds of my Readers. I have, accordingly, exhibited a faint representation of the goodness of Providence to the age in which we live, and the objections which have been raised against it. I have replied to those objections, in the same order in which I had stated them, pointing out, as I went along, the wonderful harmony which prevails in the distribution of the Globe abandoned, as some would have it, to the simple Laws of motion and of chance.

I have presented a new theory of the courses of the Tides, of the motion of the Earth in the Ecliptic, and of the Universal Deluge: And I am now going to attack, in my turn, the methods of our Reason, and the Elements of our Sciences, before I proceed to lay down some princi-

ples, which may indicate to us a certain path to the discovery of Truth.

But let it be understood, that if, in the course of this Work, and particularly in this article, I have combated our natural Sciences, it is only so far as system is concerned: I give them full credit on the side of observation. Besides, I highly respect the persons who devote themselves to the pursuit of Science. I know nothing in the world more estimable, next to the virtuous man, than the man of real knowledge, if, however, it be possible to separate the Sciences from Virtue. What sacrifices and privations does not the cultivation of them demand! While the herd of Mankind is growing rich and renowned by agriculture, commerce, navigation and the arts, it has been frequently seen, that those who cleared the way for all the rest, lived in indigence themselves, unknown to, and disregarded by, their contemporaries. The man of Science, like the torch, illuminates all around him, and remains himself in obscurity.

I have attacked, then, neither the Learned, whom I honour, nor the Sciences, which have been my consolation through life; but had time permitted, I would have disputed every inch of ground with our methods and our systems. They have thrown us into such a variety of absurd opinions, in every branch of scientific research, that, I do not hesitate to affirm, our Libraries, at this day, contain more of error than of information. Nay, I could venture to wager, that were you to introduce a blind man* into the King's Library, and let him take out any book

* The word in the original is, a *Quinze vingt*. The Quinze vingt at Paris is a royal foundation of Saint *Louis*, for the relief of *fifteen score*, that is, three hundred blind persons: Hence, in the Parisian phrase, any one, in general, afflicted with the want of sight, is denominated a Quinze vingt.

The *King*'s *Library* is another establishment, which reflects the highest honour on the French Government. It was founded by the famous Cardinal *de Richlieu*; who, however, transferred the credit of it to the Prince. The building is erected in the very centre of the Metropolis, and contains a most magnificent collection of books and manuscripts, in all languages, and

at a venture, the firſt page of that book on which he may chance to lay his hand, ſhall contain an error. How many probabilities ſhould I have in my favour, among romance writers, poets, mythologiſts, hiſtorians, panegyriſts, moraliſts, naturaliſts of ages paſt, and metaphyſicians of all ages and of all countries? There is, in truth, a very ſimple method to check the miſchief which their opinions might produce; it is to arrange all the books which contradict themſelves, by the ſide of each other; as theſe are, in every walk of literature, almoſt infinite in number, the reſult of human knowledge, as far as they convey it, will be reduced almoſt to nothing.

By our very methods of acquiring knowledge, we are deluded into error. Firſt, to ſucceed in the ſearch of Truth, we ought to be entirely exempted from the influence of paſſion; and yet, from our earlieſt infancy, the paſſions are wilfully ſet afloat, and thus reaſon receives an improper bias from the very firſt. This maxim is laid down as the fundamental baſis of all conduct, and of all opinion, *Make your fortune.* The effect of this is, we no longer prize any thing but what has ſome relation to this appetite. Even natural truths vaniſh out of ſight, becauſe we no longer contemplate Nature, except in machines or books.

In order to our believing in GOD, ſome perſon of conſequence muſt aſſure us there is one. If *Fenelon* ſays it is ſo, we admit it, becauſe *Fenelon* was preceptor to the Duke of *Burgundy*, an Archbiſhop, a man of quality, and addreſſed by the title of My Lord. We are fully convinced of the exiſtence of GOD by the arguments of *Fenelon*, becauſe his credit reflects ſome upon ourſelves. I do not mean to affirm, however, that his virtue contrib-

relative to every art and ſcience; of drawings, models, mathematical inſtruments, &c. It is opened on certain days of the week, and for a conſiderable part of the day, for the inſpection and uſe of ſtrangers as well as natives. And, even in Paris, I ſaw no petty officer, on duty at the Library, hold out his hand for a fee. H. H.

uted nothing to the force of his reaſoning: But no farther than as it ſtands in connexion with his reputation and his fortune; for were we to meet this ſame virtue in a water porter, its luſtre would fade in our eyes. To no purpoſe would ſuch a one furniſh proofs of the exiſtence of a GOD, more unanſwerable than all the ſpeculations of Philoſophy, in a life labouring under contempt, hard, poor, laborious, exhibiting uniform probity and fortitude, and paſſed in perfect reſignation to the will of the Supreme: Theſe teſtimonies ſo poſitive, are of no conſideration at all with us; we eſtimate their importance from the celebrity which they have acquired. Let ſome Emperor be diſpoſed to adopt the Philoſophy of this obſcure man, his maxims will be immediately extolled in every book that is publiſhed, and quoted in every academical theſis; engraved portraits of the Author would decorate every pannel, and his buſt in plaſter of Paris grace every chimney, he ſhould be an *Epictetus*, a *Socrates*, a *John James Rouſſeau*.

But ſhould a period come, in which aroſe men, of as high reputation as theſe, in favour with powerful Princes, whoſe intereſt it might be, that there ſhould be no GOD, and who, in order to make their court to ſuch Princes, denied his exiſtence; from the ſame effect of our education, which engaged us to believe in GOD, on the faith of *Fenelon*, *Epictetus*, *Socrates* and *John James Rouſſeau*, we would renounce our belief, on the credit of the others, being men of ſuch high conſideration, and, beſides, ſo much nearer to us. It is thus our education warps us: It diſpoſes us indifferently to preach the Goſpel or the Alcoran, according as our intereſt is concerned in the one or in the other.

Hence aroſe this maxim ſo univerſal and ſo pernicious, *Primò vivere, deinde philoſophari*—"To live firſt, and "ſeek wiſdom afterward." The man who is not ready to give his life in exchange for wiſdom, is unworthy of

knowing her. *Juvenal*'s ſentiment is much more rational, and deſerves rather to be adopted :

> Summum crede nefas vitam præferre pudori :
> Et propter vitam, vivendi perdere cauſas.*

" The blackeſt of crimes, believe it, is to prefer life to " honour ; and for the ſake of a few paltry years of mere " exiſtence, to ſacrifice that which alone makes life deſir- " able."

I ſay nothing of other prejudices which oppoſe themſelves to the inveſtigation of truth, ſuch as thoſe of ambition, which ſtimulate every one among us to diſtinguiſh himſelf; and this can hardly be done except in two ways; either by ſubverting maxims the moſt undoubted, and the moſt firmly eſtabliſhed, in order to ſubſtitute our own in their place; or by making an effort to pleaſe all parties, from uniting opinions the moſt contradictory; and this, taking the two caſes together, multiplies the ramifications of error to infinity. Truth has, farther, to encounter a multitude of other obſtacles on the part of powerful men, who can make an advantage of error. I ſhall confine myſelf to thoſe which are to be imputed to the weakneſs of our reaſon, and ſhall examine their influence on our acquirements in natural knowledge.

It is eaſy to perceive, that moſt of the Laws which we have preſumed to aſſign to Nature, have been deduced ſometimes from our weakneſs, ſometimes from our pride. I ſhall take a few inſtances, as they happen to occur to my thoughts, and which are conſidered as moſt indubitably certain. For example, we have ſettled it, that the Sun muſt be in the centre of the planets, in order to regulate

* Imitated thus :

> The worſt of crimes, believe it, generous youth,
> Is to buy life, by ſelling ſacred truth :
> Virtue's the gem of life, the Sage's ſtore ;
> But life is death, when honour is no more.

their motion, becauſe we are under the neceſſity of placing ourſelves in the centre of our perſonal concerns, for the purpoſe of keeping an eye over them. But if, in the caſe of the celeſtial ſpheres, the centre naturally belongs to the moſt conſiderable bodies, How comes it about that *Saturn* and *Jupiter*, which greatly exceed our Globe in magnitude, ſhould be at the extremity of our vortex?

As the ſhorteſt road is that which fatigues us leaſt, we have taken upon us to conclude, that, in like manner, this muſt be the plan of Nature. Conſequently, in order to ſpare the Sun a journey of about ninety millions of leagues, which he muſt every day perform, in giving us light, we ſet the Earth a ſpinning round its own axis. It may be ſo; but if the Earth revolves round itſelf, there muſt be a great difference in the ſpace paſſed through by two cannon balls, ſhot off at the ſame inſtant, the one toward the Eaſt, and the other toward the Weſt; for the firſt goes along with the motion of the Earth, and the ſecond goes in the oppoſite direction. While both are flying in the air, and removing the one from the other, each proceeding at the rate of ſix thouſand fathoms in a minute, the Earth, during that ſame minute, is outflying the firſt, and removing from the ſecond, with a velocity which carries it along at the rate of ſixteen thouſand fathoms; this ought to put the point of departure twentytwo thouſand fathom behind the ball which is flying to the Weſt, and ten thouſand fathom before that which is flying to the Eaſt.

I once propoſed this difficulty to a very able Aſtronomer, who conſidered it as almoſt an inſult. He replied, as the cuſtom of our Doctors is, that the objection had been made long before, and reſolved. At length, as I entreated him to have compaſſion on my ignorance, and to give me the ſolution, he retailed to me the pretended experiment of a ball dropped from the top of a ſhip's maſt, when under ſail, and which falls on deck cloſe to the maſt, notwithſtanding the ſhip's progreſſive motion. "The

" Earth," ſaid he, " carries along, in like manner, the ro-
" tation of the two balls, in its own movement. Were
" they to be ſhot off in a perpendicular direction, they
" would fall back preciſely on the point from whence
" they were emitted." As axioms are not very expenſive, and ſerve to cut ſhort all difficulties, he ſubjoined this as one: " The motion of a great body abſorbs that
" of a ſmall." If this axiom be founded in truth, replied I, the ball dropped from the top of the maſt of a ſhip under ſail, ought not to fall back cloſe to the bottom of the maſt; its motion ought to be abſorbed, not by that of the veſſel, but by that of the Earth, which is far the greater body. It ought to obey only the direction of gravity; and, for the ſame reaſon, the Earth ought to abſorb the motion of the bullet which is going along with it toward the Eaſt, and force it back into the cannon from which it iſſued.

I was unwilling to puſh this difficulty any farther; but I remained, as has frequently happened to me, after the moſt luminous ſolutions of our ſchools, ſtill more *perplexed* than I was before. I began to call in queſtion the truth of not only a ſyſtem and of an experiment, but what is worſe, of an axiom. Not that I reject our planetary ſyſtem, ſuch as it is given us; but I admit it for the ſame reaſon which at firſt ſuggeſted it. It is from its being the beſt adapted to the weakneſs of my body, and of my mind. I find, in fact, that the rotation of the Earth, every day, ſaves the Sun a prodigious journey; but, in other reſpects, I by no means believe that this ſyſtem is that of Nature, and that ſhe has diſcloſed the cauſes of motion to men, who are incapable of accounting for the movement of their own fingers.

I beg leave to ſuggeſt ſome farther probabilities in favour of the Sun's motion round the Earth. " The Aſ-
" tronomers of Greenwich, having diſcovered that a ſtar
" of Taurus has a declination of two minutes, every
" twentyfour hours; that this ſtar not being dim, and

" having no train, cannot be conſidered as a comet, com-
" municated their obſervations to the aſtronomers of Pa-
" ris, who found them accurate. M. *Meſſier* was appoint-
" ed to make a report of this to the Academy of Sciences,
" at their next meeting.*"

If the Stars are Suns, here then is a Sun in motion, and that motion is a preſumption, at leaſt, that ours may move.

The ſtability of the Earth may be preſumed, on the other hand, from this circumſtance, that the diſtance of the Stars never changes with reſpect to us, which muſt perceptibly take place, if we performed every year, as is alleged, a round of ſixtyfour millions of leagues in diameter through the Heavens; for in a ſpace ſo vaſt, we muſt, of neceſſity, draw nigher to ſome, and remove from others.

Sixtyfour millions of leagues, we are told, dwindle to a point in the Heavens, compared to the diſtance of the Stars. I am much in doubt as to the truth of this. The Sun, which is a million of times greater than the Earth, preſents an apparent diameter of only ſix inches, at the diſtance of thirtytwo millions of leagues from us. If this diſtance reduces to a diameter ſo ſmall, a body ſo immenſe, it is impoſſible to doubt, that double the diſtance, namely, ſixtyfour millions of leagues, would diminiſh it ſtill much more, and reduce it, perhaps, to the apparent magnitude of a Star; and it is far from being impoſſible, that, on being thus diminiſhed, and on our ſtill removing ſixtyfour millions of leagues farther, he would entirely diſappear. How comes it to paſs, then, that when the Earth approaches, or removes to this diſtance from the Stars in the Firmament, in performing its annual circle, no one of thoſe Stars increaſes or diminiſhes in magnitude with reſpect to us.

I ſubmit ſome farther obſervations, tending to prove, that the Stars have, at leaſt, motions peculiar to them-

* Extract from the Courier de l'Europe, Friday, 4th May, 1781.

ſelves. The ancient Aſtronomers have obſerved, in the Neck of the Whale, a Star which preſented much variety in its appearances, ſometimes it appeared for three months together, ſometimes during a longer interval; ſometimes its apparent magnitude was greater, ſometimes ſmaller. The time of its appearances was irregular. The ſame Aſtronomers, report, that they had obſerved a new Star in the Heart of the Swan, which from time to time diſappeared. In the year 1600, it was equal to a Star of the firſt magnitude; it gradually diminiſhed, and at length diſappeared. M. *Caſſini* perceived it in 1655. It increaſed for five years ſucceſſively; it then began to decreaſe, and reappeared no more. In 1670 a new Star was obſerved near the head of the Swan. Father *Anſelm*, a Carthuſian friar, and ſeveral other Aſtronomers, made the obſervation. It diſappeared, and became again viſible in 1672. from that period, it was ſeen no more till 1709, and in 1713 it totally diſappeared.

Theſe examples demonſtrate, that the Stars not only have motions, but that they deſcribe curves very different from the circles and the ellipſes which we have aſſigned to the heavenly bodies. I am fully perſuaded, that there is among theſe the ſame variety of motion, as between thoſe of many terreſtrial bodies; and that there are Stars which deſcribe cycloïds, ſpirals, and many other curves, of which we have not ſo much as an idea.

I muſt proceed no farther on this ground, for fear of appearing better informed reſpecting the affairs of Heaven, than thoſe which are much nearer to us. All that I intended was to expoſe my doubts and my ignorance. If Stars are Suns, then there muſt be Stars in motion; and, ſurely, ours may be in motion as well as they are.*

* I now leave the Reader to reflect on the total diſappearance of thoſe Stars. The ancients had obſerved ſeven Stars in the Pleiades. Six only are now perceptible. The ſeventh diſappeared at the ſiege of Troy. *Ovid* ſays, it was ſo affected by the fate of that unfortunate city, as, from grief, to cover its face with its hand. I find, in the book of *Job*, a curious paſ-

It is thus that our general maxims become the ſources of error; for we never fail to charge with diſorder whatever ſeems to recede from our pretended order. That which I formerly quoted, namely, that Nature, in her operations, takes always the ſhorteſt road, has filled our Phyſics with falſe views innumerable. There is nothing however, more flatly contradicted by experience. Nature makes the waters of the rivers to meander through the Land, in their progreſs to the Sea, inſtead of tranſmitting them in a ſtraight line. She cauſes the veins to perform a winding courſe through the human body; nay, ſhe has perforated certain bones expreſsly, in order to afford a paſſage to ſome of the principal veins into the interior of the ſtronger limbs, to prevent their being expoſed to injury by external concuſſions. In a word, ſhe expands a muſhroom in one night, but takes a century to bring an oak to perfection. Nature very ſeldom takes the neareſt road, but ſhe always takes that which is beſt adapted to the purpoſe.

This rage for generalizing has dictated to us, in every branch of Science, an infinite number of maxims, ſentences, adages, which are inceſſantly contradicting themſelves. It is one of our maxims, that a man of genius catches every thing at a glance, and executes all by one ſingle Law. For my own part, I conſider this ſublime method of obſerving and executing, as one of the ſtrongeſt proofs of the weakneſs of the human mind. Man never can proceed with confidence but in one ſingle path.

ſage, which ſeems to preſage this diſappearance: It is chap. xxxviii. ver. 31. *Numquid conjungere valebis micantes ſtellas pleiadas, aut gyrum arcturi poteris diſſipare?* "Will it be in thy power to unite the brilliant Stars, the "Pleiades; and to turn aſide the great Bear from its courſe?" This is the import of the tranſlation of M. *le Maitre de Sacy*. However, if I might venture to give an opinion after that learned man, I would put a different ſenſe on the concluſion of the paſſage. *Gyrum arcturi diſſipare*, means, in my opinion, "to diſſipate the attraction of the arctic pole" I here repeat what I have already obſerved, that the Book of *Job* is replenifhed with moſt profound knowledge of Nature.

As soon as a variety present themselves, he becomes perplexed, and goes astray; he is at a loss to ascertain which he ought to pursue: That he may make sure of not deviating, he admits only one to be right; and, once engaged, right or wrong, pride stimulates him forward. The AUTHOR of Nature, on the contrary, embracing in his infinite intelligence, all the spheres of all beings, proceeds to their production by Laws as various as his own inexhaustible conceptions, in order to the attainment of one single end, which is their general good. Whatever contempt Philosophers may express for final causes, they are the only causes which he permits us to know. All the rest He is pleased to conceal from us; and it is well worthy of being remarked, that the only end which He discloses to our understanding, is also the same with that which he proposes to our virtues.

One of our most ordinary methods, when we catch some effect in Nature, is to dwell upon it, at first, from weakness, and afterwards, to deduce from it an universal principle, out of vanity. If after this we can find means, and it is no difficult matter to apply to it a geometrical theorem, a triangle, an equation, were it but an $a+b$, this is sufficient to render it for ever venerable. It was thus, that, in the last age, every thing was explained on the principles of the corpuscular philosophy, because it was perceived that some bodies were formed by intus susception, or an aggregation of parts. A seasoning of Algebra, which they found means to add to it, had invested it with so much the more dignity, that most of the reasoners of those times understood nothing of the matter. But being indifferently endowed, its reign was of short duration. At this day, we do not so much as mention the names of a long list of learned and illustrious gentlemen, whom all Europe then concurred in covering with laurels.

Others having found out that air pressed, set to work with every species of machinery to demonstrate that air

poſſeſſed gravity. Our books referred every thing to the gravity of the air; vegetation, the human temperament, digeſtion, the circulation of the blood, the phenomena, the aſcenſion of fluids. They found themſelves ſomewhat embarraſſed, it is true, by capillary tubes, in which the fluid aſcends, independently of the action of the air. But a ſolution was found for this likewiſe; and *woe betide* thoſe, in the phraſe of certain Writers, who do not comprehend it! Others applied themſelves to the inveſtigation of its elaſticity, and have explained, equally well, all the operations of Nature, by this quality of the air. The univerſal cry was, Now the veil is removed; we have caught her in the fact. But did not the Savage know, when he walked againſt the wind, that air had both gravity and elaſticity? Did he not employ both thoſe qualities in managing his canoe when under ſail? I do not object to inveſtigation, if natural effects are applied, after exact calculation, and unequivocal experiment, to the neceſſities of human life; but they are, for the moſt part, introduced for the purpoſe of regulating the operations of Nature, and not our own.

Others find it ſtill more commodious to explain the ſyſtem of the Univerſe, without deducing any conſequence from it. They aſcribe to it Laws which have ſo much accuracy and preciſion, that they leave to the divine Providence nothing more to do. They repreſent the Supreme Being as a Geometrician, or a Mechaniſt, who amuſes himſelf with making ſpheres, merely for the pleaſure of ſetting them a ſpinning round. They pay no regard to harmonies, and other moral cauſes. Though the exactneſs of their obſervations may do them honour, their reſults are by no means ſatisfactory. Their manner of reaſoning on Nature reſembles that of a Savage, who, on obſerving, in one of our cities, the motion of the indexes of a public clock, and ſeeing, that on their pointing in a certain direction upon the hour plate, the turrets fell a ſtraking, crowds iſſued into the ſtreets, and a conſiderable

part of the inhabitants were put in motion, ſhould thence conclude, that a clock was the principle of all European occupations. This is the defect to be imputed to moſt of the Sciences, which, without conſulting the end of the operations of Nature, perplex themſelves in an unprofitable inveſtigation of the means. The Aſtronomer conſiders only the courſe of the Stars, without paying the ſlighteſt attention to the relations which they have with the ſeaſons. Chemiſtry, having diſcovered in the aggregation of bodies only ſaline particles, which mutually aſſimilate, ſees nothing but ſalt as the principle and the object. Algebra having been invented, in order to facilitate calculation, has degenerated into a Science which calculates only imaginary magnitudes, and which propoſes to itſelf theorems only, totally inapplicable to the demands of human life.

From all this reſults an infinity of diſorders, far beyond what I am able to expreſs. The view of Nature, which ſuggeſts to nations the moſt ſavage, not only the idea of a GOD, but that of an infinity of Gods, preſents to the Philoſophers of the day only the idea of furnaces, of ſpheres, of ſtills, and of cryſtalizations.

The Naïads, the Sylvans, Apollo, Neptune, Jupiter, impreſſed upon the Ancients ſome reſpect, at leaſt, for the Works of Creation, and attached them ſtill farther to their Country by a ſentiment of religion. But our machinery deſtroys the harmonies of Nature and of Society. The firſt is to us nothing but a gloomy theatre, compoſed of levers, pulleys, weights, and ſprings; and the ſecond merely a ſchool for diſputation. Thoſe ſyſtems, we are told, give exerciſe to the mental faculties. It may be ſo; but, May they not likewiſe miſlead the underſtanding? But the heart is in no leſs danger of being depraved. While the head is laying down principles, the heart is frequently deducing conſequences. If every thing is the production of unintelligent powers, of attractions, of fermentations, the play of fibres, of maſſes, we

then are ſubjected to their laws, as all other bodies are. Women and children deduce theſe conſequences. What, in the mean time, becomes of virtue? You muſt ſubmit, ſay theſe ingenious gentlemen, to the Laws of Nature. So then, we muſt obey the power of gravity; ſit down, and walk no more. Nature ſpeaks to us by a hundred thouſand voices. Which of theſe is now ſounding in our ears? What, will you adopt as the rule of your life, the example of fiſhes, of quadrupeds, of plants, or even of the heavenly bodies?

There are Metaphyſicians, on the contrary, who, without paying regard to any one Law of Phyſics, explain to you the whole ſyſtem of the Univerſe, by means of abſtract ideas. But this is a proof that their ſyſtem is not the ſyſtem of Nature, namely, that with their materials and their method, it would be an eaſy matter to ſubvert their order, and to frame another totally different from it, provided one were diſpoſed to take the ſmall trouble which it requires. Nay, a reflection ariſes out of this, which levels a mortal blow at the pride of human underſtanding; it is this, that all theſe efforts of the genius of Man, ſo far from being able to conſtruct a World, are incapable of ſo much as putting a grain of ſand in motion.

There are others, who conſider the ſtate in which we live as a ſtate of progreſſive ruin and of puniſhment. They proceed on the ſuppoſition, conformably to the authority of the Sacred Writings, that this Earth once exiſted with other harmonies. I readily admit what Scripture ſays on this ſubject, but I object to the explanations of Commentators. Such is the weakneſs of our intellectual powers, that we are incapable of conceiving or imagining any thing beyond what Nature actually exhibits to us. They are groſsly miſtaken, accordingly, when they affirm, for inſtance, that, when the Earth was in a ſtate of perfection, the Sun was conſtantly in the Equator; that the days and nights were perpetually equal; that there

was an eternal Spring; that the whole face of the ground was ſmooth and level, and ſo on.

Were the Sun conſtantly in the Equator, I queſtion whether a ſingle ſpot of the Globe would be habitable. Firſt, the Torrid Zone would be burnt up by his fervent heat, as has been already demonſtrated; the two icy Zones would extend much farther than they do at preſent; the temperate Zones would be at leaſt as cold toward their middle, as they are with us at the vernal Equinox; and this temperature would prevent the greateſt part of fruits from coming to maturity. I know not where the perpetual Spring would be; but, if it could any where exiſt, never could Autumn there exiſt likewiſe. The caſe would be ſtill worſe were there neither rocks nor mountains on the ſurface of the Globe, for not one river, nay not a brook of water would flow over the whole Earth. There would be neither ſhelter nor reflex, to the North, to cheriſh the germination of plants, and there would be neither ſhade nor moiſture, to the South, to preſerve them from the heat. Theſe wonderful arrangements actually exiſt in Finland, in Sweden, at Spitzberghen, and over the whole northern regions, which become loaded with rocks in proportion as the latitude increaſes; and they riſe, in like manner, in the Antilles, in the Iſle of France, and in all the other iſlands and diſtricts comprehended between the Tropics, where the face of the ground is covered over with rocks, eſpecially toward the Line; in Ethiopia, the territory of which Nature has overſpread with vaſt and lofty rocks, almoſt perpendicular, which form all around them deep valleys, delightfully ſhady and cool. Thus, as was before obſerved, in order to refute our pretended plans of perfection, it is ſufficient to admit them.

There is another claſs of Literati, on the contrary, who never deviate from their track, and who abſtain from looking at any thing beyond it, however rich in facts they may be; ſuch are the Botaniſts. They have obſerved the

ſexual parts in plants, and employ themſelves entirely in collecting and arranging them, conformably to the number of thoſe parts, without troubling themſelves about knowing any thing farther of them. When they have claſſed them in their heads and in their herbals, into umbellated, into roſe formed, or into tubulous, with the number of their ſtamina; if to this they are able to affix a parcel of Greek terms, they are poſſeſſed, as they imagine, of the complete ſyſtem of vegetation.

Others of them, to do them juſtice, go ſomewhat farther. They ſtudy the principles of plants; and in order to attain their object, pound them in mortars, or diſſolve them in their alembics. The proceſs being completed, they exhibit ſalts, oils, earths; and tell you gravely, theſe are the principles of ſuch and ſuch a plant. For my own part, I no more believe that any one can ſhew me the principles of a plant in a phial, than he can diſplay thoſe of a wolf, or of a ſheep, in a kettle. I reſpect the myſterious operations of Chemiſtry; but whenever they act on vegetables, the proceſs deſtroys them. Permit me to quote the deciſion which an eminent Phyſician has pronounced on his own experiments. I mean Doctor *J. B. Chomel*, in the preliminary diſcourſe to his uſeful Abridgment of the Hiſtory of common Plants.* "Two thouſand anal-
"yſes nearly," ſays he, "of different plants, made by the
"Chemiſts of the Royal Academy of Sciences, have af-
"forded us no farther information than this, that from
"all vegetables may be extracted a certain quantity of an
"acid liquor, more or leſs of eſſential or fetid oil, of ſalt
"fixed, volatile, or concrete, of inſipid phlegm and of
"earth; and, in many caſes, almoſt the ſame principles,
"and in the ſame quantities, from plants whoſe virtues
"are extremely different. This very tedious, and very
"painful purſuit, accordingly, has turned out a merely
"uſeleſs attempt toward a diſcovery of the effects of

* Vol. i. page 37.

" plants; and has ſerved only to undeceive us, reſpecting " the prejudices which might have been entertained in " favour of ſuch an analyſis." He adds, that the celebrated Chemiſt *Homberg*, having ſown the ſeeds of the ſame plants in two frames, filled with earth, impregnated with a ſtrong lye, the one of which was afterwards watered with common water, and the other with water in which nitre had been diſſolved, theſe plants reproduced very nearly the ſame principles. Here, then, is our ſyſtematic Science completely overturned; for it can diſcover the eſſential qualities of plants, neither by their compoſition nor their decompoſition.

Many other errors have been adopted reſpecting the Laws of the expanſion and the fecundation of plants. The Ancients had diſtinguiſhed, in many plants, males and females; and a fecundation, by means of emanations of the ſeminal powder, ſuch as in the datebearing palm tree. We have applied this Law to the whole vegetable kingdom. It embraces, no doubt, a very extenſive field; but how many vegetables, beſides, propagate themſelves by ſuckers, by ſlips, by knittings, by the extremities of their branches! Here are, then, in the ſame kingdom, various methods of reproduction. Nevertheleſs, when we perceive no longer in Nature, the Law which has once been adopted in our books of Science, we are weak enough to imagine that ſhe has gone aſtray. We have only one thread, and when it ſnaps, we conclude, that the ſyſtem of the Univerſe muſt be on the point of diſſolution. The Supreme Intelligence diſappears from before our eyes, the moment that our own happens to be a little diſturbed. I entertain no doubt, however, that the AUTHOR of Nature has eſtabliſhed Laws for the vegetable World, now ſo generally ſtudied, which are ſtill to us entirely unknown. I take the liberty to ſubjoin on this ſubject, an obſervation which I ſubmit to the experience of my Readers.

Having tranſplanted, in the month of February of the year 1783, ſome ſimple violet plants, which had begun to puſh out ſmall flower buds; this tranſplantation checked their expanſion in a manner very extraordinary. Theſe ſmall buds never came into flower, but their ovary having ſwelled, attained the uſual ſize, and changed into a capſula filled with ſeeds, without diſplaying, outwardly or inwardly, either petal, or anthera, or ſtigma, or any part whatever of the flower. All theſe buds preſented ſucceſſively the ſame phenomena in the months of May, of June and of July, but no one of thoſe violet plants preſented the leaſt ſemblance of a flower. I only perceived in the ſhooting buds which I opened, the parts which ſhould have compoſed the flower withered within the calix. I ſowed again their ſeeds which had not been fecundated, and hitherto they have not ſprung up. This experiment ſo far is favourable to the Linnæan ſyſtem; but it is in another reſpect a deviation, as it demonſtrates the poſſibility of a plant's producing fruit without having flowered.

It may be here proper to remark, once for all, that phyſical Laws are ſubordinate to the Laws of utility; that is, to give an inſtance, the Laws of vegetation are adapted to the preſervation of ſenſible beings, for whoſe uſe they were deſigned. Accordingly, though the flowering of my violet may have been interrupted, this prevented not the production of its ſeeds, which were deſtined to be the ſubſiſtence of ſome animal, whoſe natural food it is. For this reaſon, too, the moſt uſeful plants, ſuch as the gramineous, are thoſe which have the greateſt variety of methods to reproduce themſelves. If Nature, with reſpect to them, had confined herſelf rigidly to the Law of florification, they could not multiply, when paſtured upon by animals which continually browze on their ſummits. The ſame thing takes place with regard to ſuch as grow along the water courſes, as reeds and the aquatic trees; willows, alders, poplars, oſiers, mangliers, when the wa-

ters ſwell, and bury them in ſand, or totally ſubvert them, as is frequently the caſe. The ſhores would remain deſtitute of verdure, if the vegetables, which are native there, had not the faculty of reproduction by means of their own ſhoots. But the caſe is different with reſpect to the vegetable inhabitants of the mountains, as palm trees, firs, cedars, larches, pines, which are not expoſed to ſimilar accidents, and which cannot be propagated by ſlips. Nay, if you crop off the ſummit of the palm tree, it dies.

We likewiſe find theſe ſame laws of adaptation and utility in the generation of animals, to which we aſcribe uncertainty, as ſoon as we perceive variety; or when we apprehend an approximation to the vegetable kingdom by means of imaginary relations, ſuggeſted by the perception of effects common to both. Thus, for example, if ſome of our more delicate plant inſects are viviparous in Summer, it is becauſe their young find, at that ſeaſon, the temperature and the food which are adapted to them on coming into the world; and if they are oviparous in Autumn, it is becauſe the poſterity of creatures ſo delicate could not have ſurvived the Winter, without having been ſhut up in eggs. For ſimilar reaſons, if you tear off a claw from a live crab or lobſter, it puſhes out another, which ſprings out of its body, as a branch out of a tree. Not that this animal reproduction is the effect of any mechanical analogy between the two kingdoms: But thoſe animals being deſtined to live on the ſhores, among the rocks, where they are expoſed to the agitation of the waves, Nature has beſtowed on them the faculty of reproducing the limbs expoſed to be bruiſed, or broken off, by the rolling about of rocky ſubſtances, as ſhe has given to vegetables, which grow by the waters, the power of reproduction by ſhoots, becauſe they are expoſed to the danger of being overwhelmed by inundations.

Medicine has deduced a multitude of errors from thoſe apparent analogies of the vegetable and animal kingdoms. It is ſufficient to examine the train of her ſtudies, to be

ſatisfied that they are liable to ſtrong ſuſpicions. She purſues the operations of the ſoul through the ſtructure of a corpſe, and the functions of life in the lethargy of death. If ſhe happens to perceive ſome valuable property in a vegetable, ſhe exalts it into an univerſal remedy. Liſten to her aphoriſms. Plants are uſeful to human life: Hence ſhe concludes, that a vegetable diet will make a man live for ſeveral ages. Who is able to enumerate the books, the treatiſes, the panegyrics, which have been compoſed on the virtues of plants! Multitudes of patients die, notwithſtanding, with their ſtomachs full of thoſe wonderful ſimples. Not that I undervalue their qualities when judiciouſly applied; but I abſolutely reject the reaſonings which attempt to connect the duration of human life with the uſe of a vegetable regimen.

The life of Man is the reſult of all the moral adaptations, and depends much more on ſobriety, on temperance, and the other virtues, than on the nature of aliments. The animals which live entirely on plants, Do they attain even ſo much as the age of Man? The deer and wild goats, which feed on the admirable vulnerary herbs of Switzerland ought never to die; nevertheleſs, they are very ſhort lived. The bees which ſuck the nectar of their flowers, likewiſe die, and ſeveral of their ſpecies, in the ſpace of one year. There is a limited term fixed for the life of every kind of animal, and a regimen peculiar to it; that of Man alone extends to every variety of aliment. The Tartar lives on raw horſe fleſh, the Dutchman on fiſh, another nation on roots, another on milk diet; and in all countries you meet with old people. Vice alone, and mental uneaſineſs, ſhorten human life; and I am perſuaded, that the moral affections are of ſuch extenſive influence, with reſpect to Man, that there is not one in the whole catalogue of diſeaſes but what owes its origin to them.

Hear what *Socrates* thought of the ſyſtematic Philoſophy of his age; for in all ages, ſhe has abandoned herſelf

to the ſame extravagancies. " He did not amuſe himſelf," ſays *Xenophon*,* " with reſearches into the myſteries of " Nature; or with enquiring in what manner, that which " the Sophiſts call the World was created; nor what ir- " reſiſtible, elaſtic force governs all celeſtial things: On " the contrary, he expoſed the folly of thoſe who addict " themſelves to ſuch contemplations, and demanded, if " it was after having acquired a perfect knowledge of hu- " man things, that they undertook the inveſtigation of " thoſe which are divine; or whether they conſidered it " as a character of true wiſdom, to neglect what was " within their reach, in order to graſp at objects far a- " bove them. He expreſſed ſtill farther aſtoniſhment, that " they did not diſcern the impoſſibility of Man's compre- " hending all thoſe wonders, conſidering that the perſons " who had the reputation of being moſt profoundly ſkil- " led in ſuch matters, maintained opinions contradictory " to each other, and quarrelled like madmen. For as a- " mong madmen, there are ſome undaunted at the ap- " proach of the moſt formidable calamities, and others " affrighted where there is no appearance of danger; in " like manner, among thoſe Philoſophers, ſome have " maintained, that there is no action which may not be " performed in public, nor a word which may not be " freely ſpoken in the preſence of the whole World; " others, on the contrary, have taught, that all intercourſe " with men ought to be broken off, and perpetual ſolitude " preferred to ſociety: Some have poured contempt on " temples and altars, and decried the worſhip of the " Gods; others are ſuch ſlaves to ſuperſtition, as to a- " dore wood, and ſtone, and irrational animals. And as " to the Science of natural things, ſome have acknowl- " edged but one ſingle being; others have admitted an " infinite number: Some inſiſt, that all things are in a " ſtate of perpetual motion; others, that there is no ſuch

* *Xenophon*'s Memorable Things of *Socrates*, book i.

" thing as motion : Some tell you that the World is fill-
" ed with inceſſant generations and diſſolutions ; and
" others aſſure you that nothing is generated or deſtroyed.
" He ſaid farther, that he would be gladly informed by
" thoſe ingenious gentlemen, whether they entertained
" the hope of ſome time or other reducing to practice
" what they taught, as perſons inſtructed in any art, have
" it in their power to exerciſe it at pleaſure, either for
" their own private emolument, or for the benefit of their
" friends ; and whether they likewiſe imagined, after
" they had diſcovered the cauſes of every thing that comes
" to paſs, that they ſhould be able to diſpenſe winds and
" rains, and diſpoſe of times and ſeaſons, in ſubſerviency
" to their neceſſities ; or if they ſatisfied themſelves with
" the bare knowledge of thoſe things, without any ex-
" pectation of advantage from them."

Not that *Socrates* was unacquainted with Nature, for he had ſtudied her thoroughly ; but he had relinquiſhed the inveſtigation of the cauſes, entirely in the view of riſing into admiration at the reſults. No one ever had collected more obſervations on this ſubject than he had done. He made frequent uſe of theſe in his converſations on the divine Providence.

Nature preſents to us, on every ſide, nothing but harmonies, and adaptations to our neceſſities ; and we will obſtinately perſiſt in vain efforts to trace her up to the cauſes which ſhe employs ; as if we meant to extort from her the ſecrets of her power. We do not ſo much as know the moſt common principles which ſhe ſets a working in our hands, and in our feet. Earth, water, air and fire, are elements, as we ſay. But under what form muſt Earth appear, in order to be an element ? That ſtratum called *humus*, which almoſt every where covers it, and which ſerves as a baſis to the vegetable kingdom, is a refuſe of all ſorts of ſubſtances, of marl, of ſand, of clay, of vegetables.

Is it the ſand which conſtitutes its elementary part? But ſand appears to be a ſecretion from the rock. Is it the rock, then, which is an element? But it has the appearance in its turn, of being an aggregation of ſand, as we ſee it to be in maſſes of free ſtone. Whether of the two, ſand or rock, was the principle of the other? and, Which took the precedency in the formation of the Globe? Supposing us poſſeſſed of authentic information as to this particular, What ground have we gained? There are rocks formed of aggregations of all ſorts. Granite is compoſed of grains; marbles and calcareous ſtones, of the paſte of ſhells and madrépores. There are likewiſe banks of ſand, compoſed of the wreck of all theſe ſtones: I have ſeen the ſand of cryſtal.

Shell fiſh, which ſeem to give us ſome light reſpecting the nature of calcareous ſtone, by no means indicate to us the primitive origin of that ſubſtance; for they themſelves form their ſhells of the refuſe that ſwims in the Seas. The difficulties increaſe as you attempt to explain the formation of ſo many various bodies iſſuing out of the Earth, and nouriſhed by it. In vain you call to your aſſiſtance analogies, aſſimilations, homogeneïties, and heterogeneïties. Is it not ſtrange, that thouſands of ſpecies of reſinous, oily, elaſtic, ſoft and combuſtible vegetables, ſhould differ ſo entirely from the rugged and ſtony ſoil which produces them?

The Siameſe Philoſophers eaſily get rid of all embarraſſment on the ſubject, for they admit, in Nature, a fifth element, which is wood. But this ſupplement is incapable of carrying them very far; for it is ſtill more aſtoniſhing, that animal ſubſtance ſhould be formed of vegetable, than that this laſt ſhould be formed of foſſil. Which way does it become ſenſible, living and impaſſioned? They admit, I grant, the interpoſition of the Sun's action. But how is it poſſible that the Snn ſhould be, in animals, the cauſe of any moral affection; or, if you like the phraſe better, of any paſſion, when we do not ſee it exerciſing a diſpoſ-

ing influence even on the component parts of plants? For example, its general effect is to dry that which is humid. How comes it to pass, then, that in a peach exposed to its action, the pulp externally should be meltingly plump, and the nut within extremely hard; whereas the contrary takes place in the fruit of the cocoa tree, which is replenished with milk inwardly, and clothed externally with a shell as hard as a stone?

Neither has the Sun more influence on the mechanical construction of animals: Their interior parts, which are most constantly moistened with humours, with blood and marrow, are frequently the hardest, such as the teeth and the bones; and the parts most exposed to the action of his heat are often very soft, as hair, feathers, the flesh and the eyes. Once more, How comes it to pass, that there is so little analogy between plants tender, ligneous, liable to putrefaction, and the Earth which produces them; and between the corals and the madrépores of stone, which form banks so extensive between the Tropics, and the sea water in which they are formed? To all appearance, the contrary ought to happen: The water ought to have produced soft plants, and the earth solid plants. If things exist thus, there must, undoubtedly, be more than one good reason for it; I think I have a glimpse of a very tolerable one: It is this, that if these analogies actually took place, the two elements would in a short time become uninhabitable; they would soon be overwhelmed by their own vegetation. The Sea would be incapable of breaking madrépores of wood, and the air of dissolving forests of stone.

The same doubts might be started, respecting the nature of Water. This element, we allege, is formed of small globules, which roll one over another; that it is to the spherical form of its elementary particles we ought to ascribe its fluidity. But if these are globules, there must be between them intervals and vacuities, without which they could not be susceptible of motion. How comes it

to paſs, then, that water is incompreſſible ? If you apply to it a ſtrong compreſſing power in a tube, it will force its way through the pores of that tube, though it be of gold ; and will burſt it, if of iron. Employ what efforts you pleaſe, you will find it impoſſible to reduce it to a ſmaller ſize. But ſo far from knowing the form of its component parts, we cannot ſo much as determine that of the combined whole. Does it conſiſt in being expanded into inviſible vapours in the air, as the dew, or collected into miſt in the clouds, or conſolidated into maſſes in the ice, or finally, in a fluid ſtate, as in the rivers, Fluidity, it is ſaid, forms one of its principal characters. Yes, becauſe we drink it in that ſtate, and becauſe, under this relation, it intereſts us the moſt. We determine its principal character, as we do that of all the objects of Nature, for the reaſon which I have already ſuggeſted, from our own moſt craving neceſſity ; but this very character appears foreign to it : For it owes its fluidity only to the action of the heat ; if you deprive it of this, it changes into ice. It would be very ſingular, ſhould it be made to appear, after all our fundamental definitions, that the natural ſtate of water was to be ſolid, and that the natural ſtate of earth was to be fluid : Now this muſt actually be the caſe, if water owes its fluidity only to heat, and if earth is nothing but an aggregation of ſands united by different glues, and attracted to a common centre, by the general action of gravity.

The elementary qualities of air, are not of more eaſy determination. Air, we ſay, is an elaſtic body : When it is ſhut up in the grains of gunpowder, the action of fire dilates it to ſuch a degree, as to communicate to it the power of hurling a globe of iron to a prodigious diſtance. But how could it have been, with all this elaſticity, compreſſed into the grains of a crumbling powder ? If you put even any liquid ſubſtance into a ſtate of fermentation in a flaſk, a thouſand times more air will be ſeparated from it, than you could force into the veſſel without

breaking it. How could this air be confined in a ſubſtance ſoft and fluid, without diſengaging itſelf by its own action ?

The air, when loaded with vapours, we farther ſay, is refrangible. The farther we advance to the North, the more elevated does the Sun appear over the Horizon, above the place which he actually occupies in the Heavens. The Dutch mariners, who paſſed the Winter of 1597, in Nova Zembla, after a night of ſeveral months, ſaw the Sun reappear fifteen days ſooner than they expected his return. All this is very well. But if vapours render the air refrangible, Why is there no Aurora, nor twilight, nor any durable refraction of light whatever, between the Tropics, not even on the Sea, where ſo many vapours are exhaled by the conſtant action of the Sun, that the Horizon is ſometimes quite involved in miſt by them ?

The light is not refracted, ſays another Philoſopher, by the vapours, but by the cold ; for the refraction of the Atmoſphere is not ſo great at the end of Summer, as at the end of Winter, at the autumnal Equinox, as at the vernal.

I admit the truth of this obſervation ; however, after very hot days in Summer, there is refraction to the North, as well as in our temperate Climates, and there is none between the Tropics : The cold, therefore, does not appear to me to be the mechanical cauſe of refraction, but it is the final cauſe of it. This wonderful multiplication of light, which increaſes in the Atmoſphere, in proportion to the intenſeneſs of the cold, is, in my apprehenſion, a conſequence of the ſame Law which tranſmits the Moon into the northern ſigns, in proportion as the Sun forſakes them, and which cauſes her to illuminate the long nights of our Pole, while the Sun is under the Horizon ; for light, be of what ſort it may, is warm. Theſe wonderful harmonies are not in the nature of the Elements, but in the will of HIM who has eſtabliſhed them in ſubordination to the neceſſities of beings endowed with ſenſibility.

Fire preſents to us phenomena ſtill more incomprehenſible. Firſt of all, Is fire matter? Matter, according to the definitions of Philoſophy, is that which is diviſible in length, breadth and depth. Fire is diviſible only in perpendicular length. Never will you divide a flame, or a ray of the Sun, in its horizontal breadth. Here, then, is matter diviſible only in two dimenſions. Beſides, it has no gravity, for it continually aſcends; nor levity, for it deſcends, and penetrates bodies ever ſo much below it. Fire, we are told, is contained in all bodies. But, being of a conſuming nature, How does it not devour them? How can it remain in water without being extinguiſhed?

Theſe difficulties, and ſeveral others, induced *Newton* to believe that fire was not an element, but certain ſubtile matter put in motion. Friction, it is true, and colliſion, elicit fire from ſeveral bodies. But how comes it, that air and water, though agitated ever ſo much, never catch fire? Nay, How comes it that water even gets cold by motion, though its fluidity is entirely owing to its being impregnated by fire? Contrary to the nature of all other motions, Wherefore does that of fire go on in a conſtant ſtate of propagation, inſtead of meeting a check. All bodies loſe their motion by communicating it. If you ſtrike ſeveral billiard balls with one, the motion is communicated among them, it is divided and loſt. But a ſingle ſpark of fire diſengages, from a piece of wood, the igneous particles, or the ſubtile matter, if you will, which are contained in it, and the whole together increaſe their rapidity to ſuch a degree, as to make one vaſt conflagration of a whole foreſt.

We are not better acquainted with the negative qualities. Cold, they tell us, is produced by the abſence of heat: But if cold is merely a negative quality, How is it capable of producing poſitive effects? If you put into water a bottle of iced wine, as I have ſeen done in Ruſſia, oftener than once, you ſee, in a ſhort time, ice of an inch in thickneſs cover the outſide of the bottle. A block of ice diſ-

fuſes cold all over the ſurrounding atmoſphere. Darkneſs, nevertheleſs, which is a privation of light, diffuſes no obſcurity over ſurrounding light. If you open, in a day of Summer, a grotto at once dark and cool, the ſurrounding light will not be in the leaſt impaired by the darkneſs which it contained; but the heat of the adjacent air will be perceptibly diminiſhed by the cold air which iſſues from it. I am aware of the reply; it will be ſaid, if there is no perceptible obſcuration in the firſt caſe, it is owing to the extreme rapidity of light, which replaces the darkneſs; but this would be increaſing the difficulty, inſtead of removing it, by ſuppoſing that darkneſs, too, has poſitive effects, which we have not time now to animadvert upon.

It is, however, on ſuch pretended fundamental principles, that moſt of our ſyſtems of Phyſics are reared. If we are in an error, or in a ſtate of ignorance, at the point of departure, it cannot be long before we go aſtray on the road; and it is really incredible with what facility, after having laid down our principles ſo ſlightly, we repay ourſelves in conſquences, in vague terms, and in contradictory ideas.

I have ſeen, for example, the formation of thunder explained in highly celebrated phyſical tracts. Some demonſtrate to you, that it is produced by the colliſion of two clouds, as if clouds, or foggy vapours, ever could produce a colliſion! Others gravely tell you, that it is the effect of the air dilated by the ſudden inflammation of the ſulphur and of the nitre which float in the air. But, in order to its being capable of producing its tremendous exploſions, we are under the neceſſity of ſuppoſing, that the air was confined in a body which made ſome reſiſtance. If you ſet fire to a great maſs of gun powder in an unconfined ſituation, no exploſion follows. I know very well that the detonation of thunder has been imitated, in the experiment of fulminating powder; but the materials employed in the compoſition of it have a ſort of tenacity.

They undergo, on the part of the iron ladle which contains them, a reſiſtance againſt which they ſometimes act with ſo much violence as to perforate it. After all, to imitate a phenomenon is not to explain it. The other effects of thunder are explained with ſimilar levity. As the air is found to be cooler after a thunder ſtorm, the nitre, we are told, which is diffuſed through the Atmoſphere, is the cauſe of it; but, Was not that nitre there before the exploſion, when we were almoſt ſuffocated with heat? Does nitre cool only when it is ſet on fire? According to this mode of reckoning, our batteries of cannon ought to become glaciers in the midſt of a battle, for a world of nitre is kindled into flame on ſuch occaſions; they are under the neceſſity, however, of cooling the cannon with vinegar; for, after having been fired off twenty times, in quick ſucceſſion, it is impoſſible to apply your hand to the piece. The flame of the nitre, though inſtantaneous, powerfully penetrates the metal, notwithſtanding its thickneſs and ſolidity.

The heat, it is true, may likewiſe be occaſioned by the interior vibration of the parts. Whatever may be in this, the cooling of the air, after a thunder ſtorm, proceeds, in my opinion, from that ſtratum of frozen air which ſurrounds us, to the height of from twelve to fifteen hundred fathoms; and which, being divided and dilated at its baſe, by the fire of the ſtormy clouds, flows haſtily into our Atmoſphere. Its motion determines the fire of the thunder, to direct itſelf, contrary to its nature, toward the Earth. It produces ſtill farther effects, which neither time nor place permit me at preſent to unfold.

It was affirmed, in the laſt age, that the Earth was drawn out at the Poles; and we are now poſitively told, that it is flattened there. I ſhall not at preſent enter into an examination of the principles from which this laſt concluſion has been deduced, and the obſervations on which it has been ſupported. The flattening of the Earth at the Poles has been accounted for from a centrifugal force, to which

likewiſe its motion through the Heavens has been aſcribed; though this pretended force, which has increaſed the diameter of the Earth at the Equator, has not the power of raiſing ſo much as a ſtraw into the air.

The flattening of the Poles, they tell us, has been aſcertained, by the meaſurement of two terreſtrial degrees, made at a vaſt expenſe, the one in Peru, near the Equator, and the other in Lapland, bordering upon the polar Circle.* Thoſe experiments were made, undoubtedly, by men of very great capacity and reputation. But perſons of at leaſt equal capacity, and of a name as high in the republic of Science, had demonſtrated, upon other principles, and by other experiments, that the Earth was lengthened at the Poles. *Caſſini* eſtimates at fifty leagues, the length by which the axis of the Earth exceeds its diameters, which gives to each of the Poles twentyfive leagues of elevation over the circumference of the Globe. We ſhall certainly enliſt under the banner of this illuſtrious Aſtronomer, if we conſider the teſtimony of the eye as of any weight; for the ſhade of the Earth appears oval over its Poles, in central eclipſes of the Moon, as was obſerved by *Tycho Brhaé* and *Kepler*. Theſe names are a hoſt in themſelves.

But without conſidering any name as an authority, where natural truths are concerned, we may conclude, from ſimple analogies, the elongation of the axis of the Earth. If we conſider, as has been already ſaid, the two Hemiſpheres as two mountains, whoſe baſes are at the Equator, the ſummits at the Poles, and the Ocean, which alternately flows from one of theſe ſummits, as a great river deſcending from a mountain, we ſhall have, under this point of view, objects of compariſon which may aſſiſt us in determining the point of elevation from which the Ocean takes its riſe, by the diſtance of the place where

* It is evident, that the concluſion, from thoſe very meaſurements, ought to have been, that the Earth is lengthened at the Poles. See the Explanation of the Plates.

its courſe terminates. Thus the ſummit of Chimboraco, the moſt elevated of the Andes of Peru, out of which the river of the Amazons iſſues, having a league and one third nearly of elevation, above the mouth of that river, which is diſtant from it, in a ſtraight line, about twenty-ſix degrees, or ſix hundred and fifty leagues, it may be thence concluded, that the ſummit of the Pole muſt be elevated above the circumference of the Earth nearly five leagues, in order to have a height proportioned to the courſe of the Ocean, which extends as far as the Line, ninety degrees diſtant, that is to ſay, two thouſand, two hundred and fifty leagues, in a ſtraight line.

If we farther conſider, that the courſe of the Ocean does not terminate at the Line, but that when it deſcends in Summer from our Pole, it extends beyond the Cape of Good Hope, as far as to the eaſtern extremities of Aſia, where it forms the current known by the name of the weſterly Monſoon, which almoſt encompaſſes the Globe, under the Equator, we ſhall be under the neceſſity of aſſigning to the Pole, from which it takes its departure, an elevation proportioned to the courſe which it is deſtined to perform, and of tripling, at leaſt, that elevation, in order to give its waters a ſufficient declivity. I put it down, then, at fifteen leagues: And if to this height we add that of the ices which are there accumulated, the enormous pyramids of which over icy mountains, have ſometimes an elevation of one third above the heights which ſupport them, we ſhall find that the Pole can hardly have leſs than an elevation of the twenty-five leagues above the circumference which *Caſſini* aſſigned to it.

Obeliſks of ice, ten leagues high, are not diſproportioned to the centre of cupolas of ice two thouſand leagues in diameter, which, in Winter, cover our northern Hemiſphere; and which have likewiſe, in the ſouthern Hemiſphere, in the month of February, that is, in the very Midſummer of that Hemiſphere, prominent borders, elevated like promontories, and three thouſand leagues, at

leaſt, in circumference, according to the relation of Captain *Cook*, who coaſted round them in the years 1773 and 1774.

The analogy which I eſtabliſh between the two Hemiſpheres of the Earth, the Poles, and the Ocean which flows from them, and two mountains, their peaks, and the rivers which there have their ſources, is in the order of the harmonies of the Globe, which exhibits a great number of ſimilar harmonies on a ſmaller ſcale in the Continents, and in moſt iſlands, which are Continents in miniature.

It would appear, that Philoſophy has, in all ages, affected to find out very obſcure cauſes, in order to explain the moſt common effects, in the view of attracting the admiration of the vulgar, who, in fact, ſcarcely ever admire any thing, but what they do not comprehend. She has not failed to take the advantage of this weakneſs of mankind, by infolding herſelf in a pompoſity of words, or in the myſteries of Geometry, the better to carry on the deception. For how many ages did ſhe ring, in our ſchools, the horror of a *vacuum* which ſhe aſcribed to Nature? How many ſagacious pretended demonſtrations of this have been given, which were to crown their authors with never fading laurels, but which are now gone to the land of forgetfulneſs?

She diſdains, on the other hand, to dwell on ſimple obſervations, which bring down to the level of every capacity, the harmonies which unite all the kingdoms of Nature. For example, the Philoſophy of our day refuſes to the Moon all influence over vegetables and over animals. It is, nevertheleſs, certain, that the moſt conſiderable growth of plants takes place in the night time; nay, that there are ſeveral vegetables which flower only during that ſeaſon; that numerous claſſes of inſects, birds, quadrupeds, and fiſhes, regulate their loves, their hunting matches, and their peregrinations according to the different phaſes of the orb of night. But what, degrade Philoſophers to

the experience of gardeners and fiſhermen! What, condeſcend to think and talk like ſuch groundlings!

If Philoſophy denies the influence of the Moon over the minuter objects of the Earth, ſhe makes it up amply, by conferring on her a very extenſive power over the Globe itſelf, without being over ſcrupulous about the ſelf-contradiction. She affirms, that the Moon, in paſſing over the Ocean, preſſes upon it, and thus occaſions the flux of the tides on its ſhores. But how is it poſſible that the Moon ſhould compreſs our atmoſphere, which only extends, they ſay, to a ſcore of leagues, at moſt, from us? Or, admitting a ſubtile matter, and poſſeſſed of great elaſticity, which ſhould extend from our Seas as far as to the globe of the Moon, How could this matter be compreſſed by it, unleſs you ſuppoſe it confined in a channel? Muſt it not, in its actual ſtate, extend to the right and to the left, while the action of the planet found it impoſſible to make itſelf felt on any one determinate point of the circumference of our Globe?

Beſides, Why does not the moon act on lakes, and ſeas of ſmall extent, where there are no tides? Their ſmallneſs ought no more to exempt them from the influence of her gravitation, than deprive them of the benefit of her light. Why are tides almoſt imperceptible in the Mediterranean? Wherefore do they undergo, in many places, intermittent movements, and retardations of two or three days? Wherefore, in a word, toward the North, do they come from the North, from the Eaſt, or from the Weſt, and not from the South, as was obſerved, with ſurpriſe, by *Martens*, *Barents*, *Linſchotten* and *Ellis*, who expected to ſee them come from the Equator, as on the coaſts of Europe?

The principal movements of the Sea, it muſt be allowed, take place, in our Hemiſphere, at the ſame times with the principal phaſes of the Moon; but we ought not from thence to conclude their neceſſary dependance, and ſtill leſs explain it by Laws which are not demonſtrated.

The Currents and the Tides of the Ocean proceed, as I think I have proved, from the effuſion of the ices of the Poles; which depend, in their turn, on the variety of the courſe of the Sun, as he approaches leſs or more toward either Pole: And as the phaſes of the Moon are themſelves regulated by the courſe of the Orb of Day, this is the reaſon why both take place at the ſame time.

Farther, the Moon when full has, as we have already obſerved, an effective and evaporating warmth: She muſt act, therefore, on the polar ices, eſpecially when at the full.* The Academy of Sciences formerly maintained that her light did not warm, after experiments made on her rays, and on the ball of a thermometer, with a burning mirror. But this is not the firſt error into which we have been betrayed by our books, and our machinery, as we ſhall ſee when we come to ſpeak of the decompoſition of the ſolar ray by the priſm. Neither is it the firſt time that an aſſembly of Literati have, without examination, adopted an opinion on the authority of perſons who made experiments with much formality and ſtatelineſs. And this is the way that errors get into vogue. The one in queſtion has, however, been completely refuted, firſt at Rome, and afterward at Paris, by a very ſimple experiment. Some one took a fancy to expoſe a veſſel full of water to the light of the Moon, and to place one ſimilar to it in the ſhade. The water in the firſt veſſel was evaporated much ſooner than that in the ſecond.

To no purpoſe do we exert all our induſtry and ingenuity; we can lay hold of nothing in Nature, except reſults and harmonies: Firſt principles univerſally eſcape us. And, what is worſt of all, the methods of our Sciences have exerciſed a pernicious influence on our morals and on religion. It is very eaſy to miſlead men with reſpect to an intelligence which governs all things, when

* This obſervation was made more than ſixteen hundred years ago. "The Moon produces thaw; diſſolving all ices and froſts by the humidity of her influence." *Pliny's Natural Hiſtory. Book ii. chap.* 101.

nothing is presented to them as first causes but mechanical means. Alas! it is not by these that we shall be able to find our way toward that Heaven, which we pretend to know so well. The greatest of Mankind have cast an eye thitherward as their last asylum. *Cicero* flattered himself with the hope of being, after death, an inhabitant of the Stars; and *Cesar*, from that elevation, to preside over the destiny of Rome. An infinite number of other men have limited their future happiness to a superintendence of mausoleums, groves, fountains; and others to a reunion with the objects of their loves. As for us, What are we now hoping for from Earth and from Heaven, where we see nothing beyond the levers of our pitiful machines?

How! as the reward of our virtues, is our destination to mount no higher than this, to be confounded with the elements! What, thy soul, O sublime *Fenelon!* to be exhaled in inflammable air; and to have had on the Earth the sentiment of an order which did not exist even in the Heavens! How, among those Stars so luminous, is there nothing but material Globes; and in their motions, so constant and so varied, nothing but blind attractions? How! Every thing around us insensible matter and no more; and intelligence given to Man, who could give himself nothing, only to render him miserable! How! and can we have been deceived by the involuntary sentiment which makes us raise our eyes to Heaven, in the agony of sorrow, there to solicit relief! The animal, on the point of closing his career, abandons himself to his natural instincts. The stag at bay seeks refuge in the most sequestered spot of the forests, content to yield up the roving spirit which animates him, under their hospitable shades. The dying bee forsakes the flowers, returns to expire at the door of her hive, and to bequeath her social instinct to her beloved Republic. And Man, following the bent of his reasoning powers, can he no where find, in the widely extended universe, any thing worthy of re-

teiving his departing ſighs; not even inconſtant friends, nor ſelfiſh kindred, nor an ungrateful Country, nor a ſoil ſtubborn to all his labours, nor a Heaven indifferent to to crimes and to virtue?

Ah! it is not thus that Nature has apportioned her gifts. We bewilder ourſelves with our vain Sciences. By driving the reſearches of our underſtanding up to the very principles of Nature, nay, of DEITY, we have ſtifled, in the heart, all feeling of both the one and the other. The ſame thing has befallen us which once befel a peaſant who was living happily in a little valley in the heart of the Alps. A brook, which deſcended from thoſe mountains, fertilized his garden. For a long time he adored, in tranquillity, the beneficent Naïad who kept his ſtream perpetually flowing; and who increaſed its quantity and its coolneſs as the Summer's heat increaſed. One day a fancy ſtruck him, that he would go and diſcover the place where ſhe concealed her inexhauſtible urn. To prevent his going aſtray, he begins with purſuing upward the track of his rivulet. By little and little he riſes upon the mountain. Every ſtep he takes, in aſcending, diſcovers to him, a thouſand new objects; plains, foreſts, rivers, kingdoms, boundleſs Oceans. Tranſported with delight, he proceeds in flattering hope of ſpeedily reaching the bleſſed abode where the Gods preſide over the deſtiny of this World. But, after a painful ſcramble, he arrives at the bottom of a tremendous glacier. He no longer ſees any thing around him but miſts, rocks, torrents, precipices. All, all has vaniſhed. Sweet and tranquil valley, humble roof, beneficent Naïad! His patrimony is now reduced to a cloud, and his divinity to an enormous maſs of ice.

It is thus that Science has conducted us through ſeductive paths, to a termination ſo fearful. She drags after her, in the train of her ambitious reſearches, that ancient malediction pronounced againſt the firſt man who ſhould

dare to eat the fruit of her forbidden tree,* "Behold, the "man is become as one of us, to know good and evil." He ſhall not, therefore, "put forth his hand, and take "alſo of the tree of life, and eat, and live forever." What literary, political, and religious ſquabbles have our pretended Sciences excited! How many men has ſhe prevented from living even a ſingle day!

The ſublime genius and the pure ſpirit of *Newton*, aſſuredly, could not have ſtood ſtill at the boundary preſcribed to a vulgar mind. On obſerving the clouds reſorting from every quarter to the mountains which ſeparated Italy from the reſt of Europe, he would have inferred the attraction of their ſummits, and the direction of their chains, conformably to the baſons of the Seas, and to the courſes of the winds: He would thence have inferred equivalent diſpoſitions for the different ſummits of the Continent and of the Iſlands: He would have ſeen the vapours ariſing out of the boſom of the Seas of America, and conveying, through the air, fecundity to the centre of Europe, fixing themſelves in ſolid ice on the lofty pinnacles of the rocks, in order to cool the Atmoſphere of hot countries; undergoing new combinations, to produce new effects: And returning, in a fluid ſtate, to waſh their former ſhores, diffuſing, in their myſterious progreſs, unlimited abundance, in a thouſand different channels. He would have obſerved, with admiration, the conſtant impulſion communicated to ſo many various movements, by the action of one ſingle luminary, the Sun, placed at the diſtance of thirtytwo millions of leagues: And, inſtead of fruitleſsly rambling after the habitation of a Naïad, at the ſummit of the Alps, he would have proſtrated himſelf before that GOD whoſe providence embraces the concerns of a whole Univerſe.

In order to ſtudy Nature with underſtanding, and to advantage, all the parts muſt be viewed in their harmony

* Geneſis, chap. iii. ver. 22.

and connexion. For my part, I, who do not pretend to be a *Newton*, am determined never to leave the borders of my rivulet; I ſhall ſet up my reſt in my humble valley, and employ myſelf in culling ſome herbs and flowers; happy if I am able to form of them ſome garlands to decorate the entrance of that ruſtic Temple, which my feeble hands have preſumed to rear to the Majeſty of Nature!*

* The ſyſtem of the harmonies of Nature, which I am proceeding to unfold, is, in my opinion, the only one which is within the reach of Man. It was firſt diſplayed by *Pythagoras* of Samos, who was the father of Philoſophy, and the founder of that ſect of Philoſophers who have been tranſmitted to us by the name of Pythagoreans. Never did a ſucceſſion of men ariſe ſo enlightened, as thoſe Sages were, in the natural Sciences; and none whoſe diſcoveries reflect higher honour on the human underſtanding. There exiſted, at that time, Philoſophers, who maintained that water, fire, air, atoms, were the principles of things. *Pythagoras* inſiſted, in oppoſition to this doctrine, that the principles of things were the adaptations and the proportions of which the harmonies were compoſed, and that goodneſs and intelligence conſtituted the nature of GOD.

He was the firſt who gave to the Univerſe the epithet of κόσμος, *mundus*, becauſe of its order. He maintained that it was governed by a Providence; a ſentiment perfectly conformable to the tenor of our Sacred Books, and to experience. He invented the five Zones, and the obliquity of the Zodiac. He taught that the Torrid Zone was habitable. He aſcribed earthquakes to the water. In fact, their focuſes, as well as thoſe of volcanoes, as we have already indicated, are always in the vicinity of the Sea, or of ſome great lake. He believed that each of the Stars was a World, containing an Earth, an Air, and a Heaven; and even in his time, this had been an anciently received opinion; for it is to be found in the verſes of *Orpheus*. Finally, he diſcovered the ſquare of the hypothenuſe, which has ſerved as a baſis to an infinite number of geometrical theorems and ſolutions.

Philolaus, of Crotona, one of his diſciples, maintained, that the Sun received the fire diffuſed over the Univerſe, and reverberated it, which affords a better explanation of his nature than the perpetual emanations of light and heat which we aſcribe to him, without reparation, and without exhauſtion. He held that Comets were Stars, which reappeared after a certain revolution. *Æcetes*, another Pythagorean, maintained the exiſtence of two Continents, that which we inhabit, and one oppoſite to it; an idea applicable only to America.

Theſe Philoſophers believed, that the ſoul of Man was a harmony compoſed of two parts; the one reaſonable, the other irrational. They placed the firſt in the head, and the other round the heart. They contended for its immortality; and taught, that at the death of the man, his ſoul returned

to the Soul of the Univerſe. They approved of divination by dreams and augury, and condemned that which is performed by means of ſacrifices. They had ſuch a ſtrong ſenſe of humanity, that they abſtained from ſhedding the blood even of animals, and from eating their fleſh.

Nature rewarded their virtues, and the gentleneſs of their manners, by innumerable diſcoveries, and beſtowed on them the glory of having as followers, *Socrates*, *Plato*, *Archytas* of Tarentum, who invented the ſcrew, *Xenophon*, *Epaminondas*, who was educated by *Lyſis* the Pythagorean, and the good King *Numa*, who taught the Tuſcan prieſts to conjure down the thunder: In a word, ſhe conferred on them all the luſtre that Philoſophy, Literature, the Military Art, or Royalty itſelf, can communicate to the moſt favoured of mortals.

Pythagoras has been calumniated, as having given encouragement to certain unmeaning ſuperſtitions; among others, abſtinence from the uſe of beans, &c. But, as truth is frequently under the neceſſity of preſenting herſelf to men under a veil, the great Philoſopher, under this allegory, conveyed to his diſciples an advice to abſtain from public employments, becauſe it was then the cuſtom to make uſe of beans, in voting at the election of Magiſtrates.

A very celebrated Writer, of modern times, who ſeems to look with an evil eye on every man of illuſtrious reputation, has preſumed to attack the character of *Xenophon*, in whom were united almoſt all the eminent qualities which can dignify human nature; piety, purity of manners, military ſkill and valour, and eloquence. His ſtyle is ſo ſweetly flowing, that the Greeks beſtowed on him the appellation of the Athenian Bee. This great man has been lately cenſured, on the ground of that celebrated retreat, by which he brought back ten thouſand Greeks into their own Country, from the very extremity of Perſia, having performed a march of eleven hundred leagues through a hoſtile country, and amidſt foes innumerable.

It has been aſſerted, by a man of great learning, that the retreat of this renowned General, was an effect of the good nature, or the piety, of *Artaxerxes*; and he has, of conſequence, treated the route which *Xenophon* purſued, by the north of Perſia, as a ſuperfluous precaution.——But is it credible that the King of Perſia, intentionally, ſhewed indulgence to the Greeks, when we know, that, by a perfidious piece of cruelty, he had put to death twentyfive of their chief men? How was it poſſible for thoſe Greeks to have returned by the ſame road which they went, conſidering that every thing in this track had been put in motion to intercept them, and that the Perſians had, through its whole extent, deſtroyed the villages? *Xenophon* defeated all their precautions, by directing his march through a track of which they had no foreſight.

For my own part, I conſider this military expedition as the moſt illuſtrious that ever was atchieved; not only from the innumerable conflicts, croſſings of rivers, forced marches over mountains, in the face of myriads upon myriads of enemies, through which it was accompliſhed: But, becauſe it was not ſullied by a ſingle act of injuſtice, and had no other object in view

but the preſervation of citizens. All that are held in high renown among the Warriors of Antiquity, have conſidered the retreat of the ten thouſand as a maſter piece in the military art. There is a ſingle expreſſion tranſmitted to us, which will forever cover it with glory, uttered in an age, and among a People, by which the Science of War was carried to the height of perfection, and in a ſituation which admitted not of diſſimulation: I mean an expreſſion of *Anthony*, when entangled in the country of the Parthians. That General, who poſſeſſed great military talents, and had at that time the command of an army of a hundred and thirteen thouſand men, of whom ſixty thouſand were actually Roman citizens, obliged, as *Xenophon* was, to make a retreat in the face of the Parthians, and twenty times on the point of failing in his attempt, frequently exclaimed, with a ſigh! *O the ten thouſand.*

[See PLUTARCH.

END OF THE FIRST VOLUME.

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